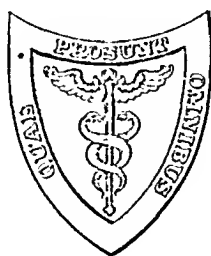


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EDITED BY
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THE
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JANUARY, 1892.

THE TONSILS IN HEALTH AND DISEASE.¹

BY HARRISON ALLEN, M.D.,
OF PHILADELPHIA.

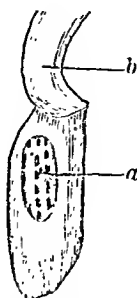
THE object of this paper is to harmonize the descriptions of the normal tonsil with the accounts of its morbid conditions. It is an axiom in medicine that the best basis on which the clinical study of any organ can rest is an exact knowledge of its structure. I will endeavor to show that our conceptions of the tonsil are not in conformity with this axiom. Some of the descriptions of the tonsil have been drawn up from hypertrophied glands, some from atrophied glands, while the terms used by anatomical and clinical writers are often at variance with one another, or may even conflict. I cannot recall any other structure in the economy of which this can be said. This confusion does not arise from lack of knowledge; for numbers of admirable papers have been written on the tonsil, and its plan is understood. But the description of the mass has become conventional, and clinicians have not seen fit to depart from antiquated and often quite inaccurate methods of expression.

The tonsil is an association of *diverticula* developed from the epithelial layer of the mucous membrane (Retterer, *Comptes Rendus*, 1885, vol. I. p. 1284), in the walls of which are grouped *muciparous glands* and *lymph-follicles*. Resulting from this association the tonsil is marked by the mouths of the diverticula, which open in a uniform manner upon the surface of the mass. The various tonsil-groups differ from one another only in the arrangement of the diverticula. Thus in the lingual tonsils they are single, in the masses occupying the tonsillar space and the roof of the pharynx they are compound.

¹ Read before the American Laryngological Association at the Washington Congress, September 27, 1891.

Such a tonsil as the one last named is exhibited in Fig. 1, from F. Th. Schmidt (*Zeitschr. für wissenschaft. Zool.*, 1863, xiii. p. 221, Tf. XV.). It will be observed that the small, linearly arranged openings are the mouths of the simple diverticula. Moreover, a disposition exists in every compound tonsil for a number of diverticula—from eight to eleven in

FIG. 1.

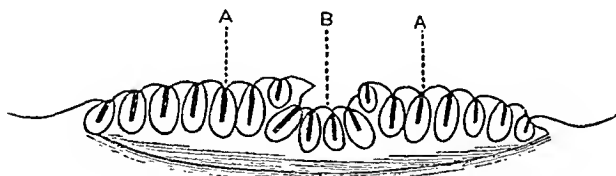


Simple form of tonsil. *a*, tonsil showing the mouths of diverticula; *b*, the uvula.
(After F. TH. SCHMIDT.)

number—to recede from the general surface of the group of which they are a part, and for the chamber in this way formed to be slightly narrowed at the mouth. Such a recess is called a *pocket* or *crypt*.¹

H. Asverus (*Nov. Act. Leop. Carol.*, 1861, Bd. xxxix.) exhibits in a diagrammatic manner this disposition.

FIG. 2.



Schema of tonsil. *A, A*, groups of diverticula on either side of *B*, a crypt.
(After ASVERUS.)

Huschke (Sömmering's *Baue des menschl. Körp.*, ed. 1844, p. 32) describes a pocket in the bottom of which smaller openings (Fig. 2) are found, and adds that this is a repetition of the type seen in apes and other mammals.

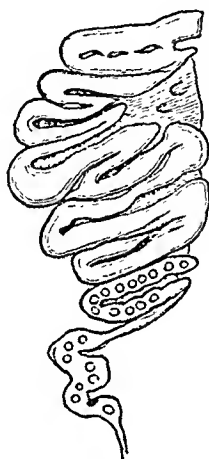
¹ The terms diverticula (gland), follicle (vesicle), and crypt (pouch or pocket), have definite meanings. It is unfortunate that the term follicle in clinical studies is generally applied to the diverticulum, while anatomists speak of the follicles as "closed nests of lymph-cells" (Asverus). In the minds of some writers the muciparous glands are also the tonsil follicles, while the term vesicle is used for the true follicle. The lacuna is the same as the crypt, but this term is used in so many ways in anatomy that it were better here discarded.

This being the accepted plan of the tonsil, let us glance at some of the descriptions given by accepted authorities.

Luschka (*Der Schlundkopf des Menschen*, 1868, p. 64) states that the body, as a rule, is coarsely foliated, and it is so figured. (Table IX., Figs. 2 and 3.) Exceptionally only is a single large opening present, leading to a proportionally wide pocket. The general form of the body is oval and provided with numerous openings of irregularly disposed canals.

Henle (*Handbuch der Eingeweidelehre des Menschen*, 1866, p. 144) lays special stress upon the presence of longitudinal folia, although stating that at times a pocket-like form may prevail.

FIG. 3.



A tonsil section showing diverticula and a single crypt. Only the lower part of the figure exhibits the lymph-follicles. (After F. TH. SCHMIDT.)

L. Heisler ("*Tonsillarum nova et accuratior descriptio*," in *Ephemer. C., Leop. Carol.*, Cent. III., IV., 1715, p. 456, Table XI.) complains that anatomists have given no exact description of the tonsil. He enters upon what he understands to be such description, and begins by stating that the tonsil is covered with a membrane which is in common with the lining membrane of the mouth. When this is pushed aside the tonsil is disclosed, the upper part reaching as high as the velum and the lower part extending in varying degrees from the root of the tongue to the pharynx. In the excellent figure accompanying this description one finds on the left side of the throat the parts remaining undisturbed, while on the other the anterior part is dissected and discloses the tonsil in its receded position. Heisler further states that, as a rule, the tonsil contains a large cavity upon the walls of which many smaller orifices open. It is evident that in this account one of the varieties which I will speak of further on is correctly outlined. The single mis-

take made by the writer is in insisting that this form is a constant one, instead of being one of the numerous variations which the tonsil may exhibit.

The account of Haller (*Element. Physiol.*, 1736, vi. 65) is not explicit. He indicates, however, an involucre, and implies that this is a layer of mucous membrane which holds the gland in position. The gland in the lower animals is said to be of the same type as in man.

Harrison (*Dublin Dissector*, Am. ed., 1855, p. 61) describes the figure of the tonsil as irregular and somewhat oval. He states that "small holes are marked upon its surface, which lead to interlobular cells."

Cruveilhier (*Anatomy of the Human Body*, 1844, American reprint, p. 334) states that the form pretty nearly resembles that of an almond. No allusion is made to the existence of cavities, but a "compound tonsil" is said "to result from the component follicles being collected into several distinct masses."

John and Charles Bell (*Anatomy and Physiology of the Human Body*, 1834, American reprint, p. 350) make no reference to the interior of the tonsil other than to state that on the surface of the organ "a number of cells open like the mouths of veins; behind the lobes a gland is felt as if it were one solid body."

A. Macalister (*Text-book of Human Anatomy*, 1889, p. 596) describes the surface as "depressed into one or more longitudinal slits, or else pitted into a series of rounded holes."

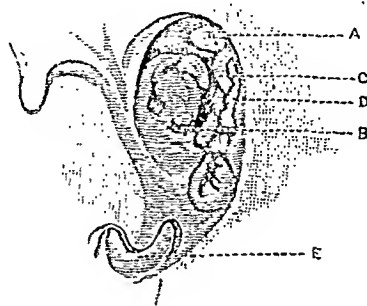
It is noticeable in the above citations¹ that the presence of ridges, depressions, and canals are implied, but without these parts being conformed to a plan, while Heisler, Huschke, Luschka, Henle, and Macalister describe pocket-shaped and foliate forms. That the first of these shapes is of morphological significance is evident from the fact that in the lower animals it is always present. The account of Bell is apparently derived from an atrophic mass. The foliations are coarse rows of lymphoid masses which define the walls of closely disposed diverticula. They are best seen when the gland is divided vertically. Are these varieties of tonsils met with in clinical studies? I find that they are. But the morphology of the gland is disguised to a remarkable extent by the products of diseased action, and it is not always easy to see in the tonsil the details of the general plan. I am sure unprejudiced observers will agree with Luschka that any comparison of the tonsil with an almond-shaped body is misleading, and that the cryptose or pocket-form, with

¹ The account of Kölliker (*Mikroskop. Anat.*, 1852, ii. 42) is not included in the above citations. His schema, which has been so often copied, exhibits the closed follicle, but defines no distinction between diverticulum and crypt. The dilated space in the single depression is called simply a "cavity" (*Höhlung des Balges*).

or without associated ridges of lymphoid tissue, is common, while the foliate form is rare.

The variation which I have most frequently seen is a rounded or elliptical mass—of which the largest is also its vertical diameter—placed in the tonsillar space a little above the level of the tongue. The organ is slightly compressed from before backward and consists for the most part of a pocket or crypt—whose walls are greatly thickened—directed

FIG. 4.



View of the foliated type of tonsil. A, the small velar tonsil; B, the opening of the crypt, the parts below this remaining smooth; C, D, two coarsely nodulated ridges, constituting the folia; E, epiglottis. (After nature.)

downward. The palato-glossal muscle is to be accused of maintaining the compression here named, in some individuals, to a degree sufficient to serve as a complication in tonsillitis.¹ In some persons the tonsil appears to be lodged almost entirely toward the palato-pharyngeal fold and displayed when the mouth is open. It may be composed of two lobate, cryptose masses arranged like two peas in a pod, but without any one of the crypts being larger than its neighbors or having special direction.

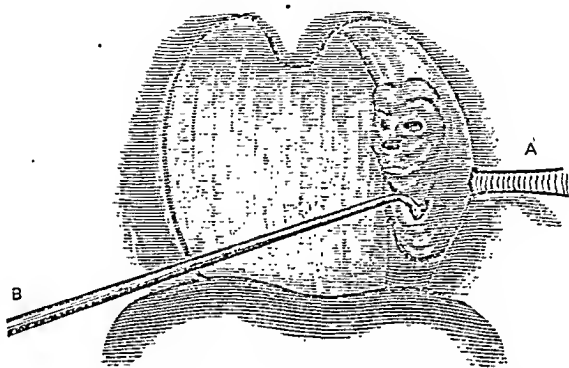
The anterior wall of the pocket is covered with mucous membrane (involucrum), which in every way is similar to that lining the pharynx, along the side of which it sometimes extends as far as the tip of the epiglottis. If close inspection be not made, this covering might be confounded with the palato-glossal fold. In such a disposition two surfaces of tonsil tissue must lie exposed toward each other. Above the mouth of the pocket lies a mass which constitutes the "tonsil" of common language. This alone is cryptose.

Very commonly the tonsil above the pocket also exhibits numerous communicating passages. I desire to call special attention to these. They can be demonstrated in the tonsils of children, where they are often long and lie deep in the gland; as well as in the adult, where they are

¹ See in this connection Houze de la Aulnoit, "Mém. sur l'étranglement des Amygdales par les Piliers du Voile du Palais," 1864.

more superficial. They may be small yet well-defined, as in a sponge, or imperfectly limited by bridge-like bands, which cross the mouths of wide, shallow crypts. Allusion to these inter-communicating tracts are made by writers; *vide* Haller, Luschka, Bell, and Asverus, the last-named alone recognizing them as morbid. It is evident that they do not exist in the morphological plan of the gland, and, so far as I know, occur in the tonsil of none of the lower animals.

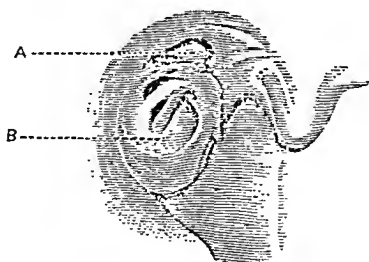
FIG. 5.



Simple form of the tonsil, showing the crypt and the almond-shaped mass above the opening. A, retractor pressing out the palato-glossal fold; B, probe in opening of the crypt. (After nature.)

It will be recognized that in hypertrophy of the tonsil the lower smooth part is enormously enlarged, and can be readily distinguished by a sulcus from the cryptose mass.

FIG. 6.



A, small velar tonsil; B, the main tonsil, showing the mouths of two diverticula and a crypt: the last-named being the largest opening on the tonsil. The parts below the mouth of the crypt are smooth and without diverticula. (From nature.)

The almond-shaped structure, therefore, which is so commonly described, is but a portion of the tonsil, and even this portion is continuous with the lining of the main pocket or crypt.

At a point still higher up, and tending to be placed slightly back

toward the palato-pharyngeal fold, lies a second, smaller, somewhat nodular body, which is quite distinct from the foregoing, since an interval exists between. This may receive the name of *velar tonsil*.

The velar tonsil is not to be confounded with the parts described by James Yearsley (*Treatise on the Enlarged Tonsil and Elongated Uvula, and other Morbid Conditions of the Throat*, London, 1843, p. 58). "In the most frequent kind of enlarged tonsils, where the glands maintain their original position, or at least extend in every direction, the Eustachian tubes are generally compressed. There is another variety of enlargement which I am not aware has ever before been noticed; it is where the diseased growth is confined to the upper margin of the tonsil, and which, from being hidden behind the veil of the palate and the anterior palatine arch, is quite out of sight when the throat is merely examined by the eye. In numerous cases I have verified this interesting observation, and effected cures by the indications of treatment which the knowledge of it afforded. We never can be certain that the tonsils have no share in producing deafness until these bodies have been examined carefully with the finger. In some instances, where nothing morbid was visible in the throat, the upper part of the tonsil has been of such magnitude as to produce, in addition to deafness, nasal speech, from encroaching on the posterior nares. These novel views have afforded me the most gratifying results, and I feel assured they will exert considerable influence on the future treatment of deafness." It is evident from the above extract that the growth named by Yearsley as being "confined to the upper margin of the tonsil" was really within the naso-pharynx, and in all probability was the mass now spoken of as "adenoid growth," or the "pharyngeal vegetations." It is interesting to know that Yearsley as early as 1843 described this growth; he was unfortunate, however, in the terms of his description, since it would appear at first sight that he alluded to the lower tonsil. The statement that the treatment of such a mass will exert considerable influence on the treatment of deafness has been abundantly substantiated.

The tonsil is in whole or in part ordinarily exposed when the mouth is open. But in some individuals it lies concealed between the palato-pharyngeal and the palato-glossal folds; in such a situation it cannot be inspected unless the palato-glossal fold is drawn outward by a retractor (Heisler, *loc. cit.*). A tonsil thus concealed is almost never seen in children or young adults. I attribute this lack of harmony between such a form and that of full maturity to the fact that the tonsil is best developed when the formative forces of the economy are unexpended. Until about the twenty-fifth year these exhibit their greatest activities. In adult life the tonsil is apt to atrophy and become exceedingly aberrant in shape. When atrophic, while all semblance of the plan is lost, clinical study is best conducted by recalling it. In many instances it

must be acknowledged that the gland forms irregular, hard nodular masses, which are apparently without diverticula. The causes producing this change are obscure. They can be assigned, in part, to certain inherent dispositions to degeneration, and in part to the results of inflammation. Few individuals escape frequent attacks of tonsillitis, ranging in severity from the mild form of mis-called follicular inflammation to the severe parenchymatous invasions. Again, the tonsil which projects from the tonsillar spaces will be disposed to rind-like thickenings from impact with food, etc. As a result most adults exhibit the gland more or less indurated, the free surface being especially firm in consistence, and occupied by minute white cicatricial bands which tend to occlude the crypts. Beneath this cortex-like layer the parenchyma may have a softer texture. According to Gustav Harff (*Ueber die anat. u. path. Struktur des Tonsillengewebe*, Bonn, 1875), the closed lymph-follicles have a disposition in the adult to be less well defined than in the young, and the connective tissue of the entire organ to be increased in volume. These conditions certainly tend to indurations, and indirectly to atrophy. In some states of health in such a tonsil, probably owing to long-continued pharyngeal irritation, the folds, especially the palato-pharyngeal, become greatly exaggerated in volume, and in an individual having a large tongue, the motion of this organ backward and downward aids the fold in exerting a certain amount of tension on the gland. However the situation may be explained, the result in the shape of the gland being moulded by resisting forces is evident; thus, it may appear to be greatly compressed from before backward, and so project into the pharynx as to exert pressure against the posterior wall and excite irritation. In most instances the mass has a disposition to retroversion. A tonsil of apparently medium size may, in the act of gagging, assume larger proportions, a circumstance due to the fact that an actual turning of the gland from before backward and from without inward takes place.

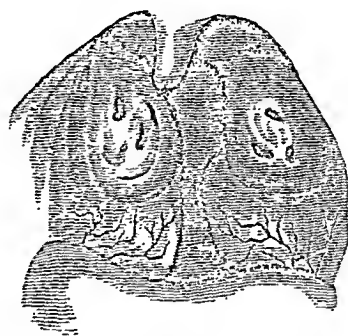
The small velar mass is probably the same as the supernumerary tonsil, upon which the late Dr. E. Carroll Morgan (*Trans. Amer. Laryng. Assoc.*, 1889, p. 4) has written. It varies greatly in size, and, as a rule, is smaller than the main tonsil. In some instances it becomes pediculated, and may even suddenly slip away from its usual position and hang into the throat so as to interfere with speech and deglutition. Such a mass was removed by me in a patient who reported in a speechless condition, and showed the pharynx in part occupied by a pediculated mass the size of a walnut. A somewhat similar case is given by Jurasz (*Monatsschr. f. Ohrenheilk.*, 1885, p. 361). Heisler (*Inst. Chir.*, 1747) describes methods of removal of what he terms an indurated tonsil, when the mass hangs by a slender stalk, and it is probably true that this writer clearly recognized the above clinical condition.

I believe many morbid processes may be restricted to the upper tonsil, the main mass not of necessity participating.

Figs. 4 and 6 exhibit the proportions usually noted as existing between the velar and the main tonsil.

But what of the foliate type of tonsil which has been noted in the early part of this paper? I may briefly say that while it is occasionally met with in practice, it is so rare that it scarcely enters into clinical study. I subjoin a sketch of this form of tonsil taken from a subject eleven years of age. It will be seen that the upper and main masses are present as in the simplest forms, but that the foliate formations appear at the side lying between the main tonsil and the palato-glossal fold. The folia are not true laminæ, but are rather of the nature of bridge-like (annectant) masses of tonsil tissue imperfectly limiting large crypt-like openings into the main tonsil and extending from the level of this mass to some of the lymphoid tissue at the side, and most likely are measurably the results of diseased action (see p. 4).

FIG. 7.



Hypertrophied tonsils showing constriction between the cryptose and the smooth non-cryptose portion. The last named is alone covered with veins. The velar tonsil is not seen. (After nature.)

I will now glance at some additional clinical conditions of the tonsil. In the first place it must be remembered that the influence which the tonsil exerts in the economy is not known. The knowledge, therefore, of a disturbance of functions being sought for as a clue to the nature of diseased action is in this instance futile. The mucoid secretion of the tonsillar surface aids in lubricating the food and prepares it for swallowing, but no reason other than the fact that adenoid tissue is everywhere developed in childhood can be given to explain why the tonsil should be larger at one time of life than another. As already mentioned, the organ is larger in childhood and early maturity than in adult life. It appears to be compensatory with the thymus body. In proportion as the thymus body disappears the tonsil increases in size. At the time

when the narrow chambers of the long bones are assuming actively the function of manufacturing blood corpuscles, the tonsil is also large, and it is probable that both structures are allied in function. R. Hingston Fox (*Journ. Anat. and Phys.*, 1886, xx. 559) attributes the large size of the faucial tonsil to the law of marginal overgrowths. "New growths," says he, "are apt to arise at such junctions (viz., of the hypoblast and the epiblast). Now, it is curious that the fauces (if it be such junction) should be the spot selected by so many diseases for the production of inflammatory lesions."

The structure of the tonsil does not prevent analogies being drawn between them and the true lymphatic glands. From the typical lymphatic glands some writers distinguish the lymph bodies appended to the alimentary canal under the name of peripheral lymph-glands. They are apparently independent of those clinical indications which exist between lymphatic glands and the region in their immediate neighborhood. I have noticed that the tonsils are very generally small in pulmonary phthisis. It is probable that a connection exists between the size of the tonsil, the rate of dental development, and the small size of the jaws. The tonsil is largest at the time when the greater number of permanent teeth are in the jaws ready to be erupted. It is an interesting fact that they are larger in the human subject than in the lower animals. Ph. Stöhr (*Virchow's Archiv*, 1884, xcvi. H. 2, p. 211) demonstrates that the follicles while closed permit their contained leucocytes to wander freely through the epithelium into the diverticula. He finds this migration to be constant in all ages and in all quadrupeds. Its significance as a factor in the peculiarities of the tonsil is therefore not apparent. Unlike Peyer's patches and the solitary glands in the small intestine (bodies which measurably recall the nature of the tonsil), no inclination to specific diseased action is here exhibited. It is true that the diphtheritic membrane frequently appears upon the tonsil, but this is apparently due to the ease with which the microbe of this disease is mechanically held within the recesses of the organ. Nevertheless a property is possessed by the tonsil which I believe is constant in adult life (I have never noted it in young children or in the aged), namely, the formation and ejection of solid pellets. They appear to be of the nature of epithelial desquamations and as such are of importance in the clinical study of the gland. When the pellets escape into the mouth, as is normally the case, the tonsil may be said to be normal, but when they escape into the interspaces of the gland and are caught between the tonsil and the adjacent folds, or are imbedded in the gland itself, they are fertile sources of mischief. How is the removal of these masses best secured? I have answered this question in my own practice by assuming that all operative procedures upon an organ should be in harmony with the plan on which it is framed. Hence in the exploration

of the tonsil for retained pellets I first attempt to define the main pocket or crypt. If I fail to detect this, I assume that its orifice has been obliterated by inflammation and that it should be opened. Even if it is found open and a number of the pellets be detected and removed, it is well to divide the pocket its entire length and sear the divided surfaces. Should the pellets, however, lie in the spaces between the tonsil and its adjacent folds, or in the spaces between the lobules, if these be present, they can be best removed by carefully exposing the entire tonsillar space. When this is thoroughly done the pellets will often fall out of themselves or can be washed away. In order to carry out the detail in the process last mentioned the following method of examination is recommended: A tongue-depressor is placed upon the tongue and given to the patient to hold. The mouth is opened to its widest extent, and an aneurism-needle (the adjustable end of which has been firmly soldered on to the shank or handle) is inserted behind the palato-glossal fold, and gentle traction made forward and slightly outward. To a patient who is untrained, it is quite likely that gagging will ensue upon this manipulation. With the exercise of a little care, however, the irritability may be so far overcome as to enable the tonsil to be freely seen. Very often no trace of a tonsil is discerned until such a manipulation is resorted to. It is an interesting fact that the act of gagging itself rather assists than otherwise in the examination, since a disposition exists for the tonsil to be turned slightly upon itself. If the patient remains composed and does not move the shoulders backward, both he and the physician can remain indifferent to the gagging as long as it does not excite vomiting.

HYPERTROPHY OF THE TONSIL.—As has been stated, the tonsil is largest in childhood, yet a point arises as to whether this is simply a physiological state of the organ or an overgrowth. In this connection I may be permitted to make the following statement: No matter how large the tonsil may become, it need not constitute a clinical state unless respiration is impeded. If the child has nasal respiration, a natural form of chest and roof of mouth, and if the teeth are regular, the tonsils are in a physiological condition; but if there is snoring respiration, irregular teeth, the habit of mouth-breathing established, a high, narrow palatal arch being present, and the child be pigeon-breasted, then the enlarged tonsil may be said to constitute a clinical condition. A. Macalister (*loc. cit.*, p. 596) asserts that the normal tonsil should not project beyond the glosso-palatine fold. According to this statement the tonsil is almost always abnormal in childhood.

An error is often made in maintaining that difficulties in respiration are due to enlarged tonsils, when the cause lies in disease of the nasopharynx. I have seen cases where the tonsils have been needlessly removed to correct the habit of mouth-breathing, when in each instance

the naso-pharynx was stuffed with a neglected adenoid growth. Hypertrophy of the tonsil being diagnosticated and attempts at reduction being demanded, the question arises as to what method is the best to accomplish this. In my judgment tonsils should never be removed as a whole; this operation leaves a large, open, and often irritable surface. As is well known, after amputation of the tonsil, the patient in going out into the open air, or travelling in heated steam-cars, may have attacks of bronchitis, or even of pneumonia. It may be said that these are very infrequent cases, and that many physicians having extended experience have not encountered such accidents; but that such are likely to occur cannot be denied.

From what has been seen in the above sketch, a transverse incision of the gland is not in the line of any of its directions of growth. Why should these several parts be treated as though they were masses of fungoid tissue?

I believe that abscission should be restricted to the removal of hardened cortex; and that, in preference to the treatment by amputation of the whole mass, after the removal of such cortex, should the crypt be closed, remembering that the tonsil is often perforated by canals which are not represented in the plan of the organ, I would carefully search for these, and when found pass a probe or director through them after the manner of exploring a region which is traversed by fistules or sinuses, the overlying tissues being freely divided. Following this rule, I would incise the tonsil in any direction and to any required depth. After this is done the separate coarse lobules can be severally taken up by a tenaculum or forceps and removed, care being taken to avoid touching the opercular or involucreal folds. Occasionally a patient presents an enormously enlarged involucreal mass enclosing a degenerate tonsil. The latter should be ablated or otherwise destroyed, but the former left absolutely untouched. As a rule, the lower portion of the gland should not be thus cut, since it does not contain the canals, and incisions into the membranous covering (involucrum) are not well borne. The submucous connective tissue is here loose, and diffuse traumatic inflammation is readily excited. Outlying tags of tissue may be removed with the knife or scissors when necessary. I have in many instances found the gland recede to normal proportions and reflex phenomena due to the hypertrophy disappear.

One of the most notable features in the clinical study of the tonsil is the ease with which exposed surfaces lose their epithelial covering, and the raw, or rather denuded, patches which arise therefrom cause the tonsil to be glued to one or both the adjacent folds. The velar tonsil moves easily with the palato-pharyngeal fold. If the gland-masses are united, the normal play of the folds is interfered with and irritation is the result. Under these conditions the bodies must be separated. If this

be done only by the knife the surfaces at once reunite and the irritation persists. It is necessary to effect a permanent separation by searing the edges of the incision by the electro-cautery. The slow process of throwing off of the eschar prevents the recurrence of the false union. The same method of procedure is to be recommended in either of the anterior or posterior unions. If the pocket-like recess in the tonsil be the subject of chronic inflammation it should, in all instances, be opened its entire length and allowed to heal after the application of the galvano-cautery, precisely as in the removal of secretion pellets. The employment of the galvano-cautery, without the knife, is often made compulsory when the irritability of the parts or the intractableness of the patient is very great. When this agent is employed the electrodes should be of small size, and inserted in the pockets or canals, small portions only being destroyed at a time.

The palato-glossal fold is really well defined only from the tonsil to the velum. Along the sides of the tonsil it is apt to be united to the main gland, except at the upper part, when a large irregular interspace can be demonstrated. This interspace serves to lodge tonsil pellets and foreign bodies. The fold will be seen in many examples spreading over the front of the main tonsil and partially concealing it. I have ventured to name this the *opercular fold*. A number of veins are often seen lying upon it. I am inclined to the opinion that, in operating on the tonsil, most of the troubles due to hemorrhage are caused by interference with this fold; for within it often lies a branch of the facial artery. Under all circumstances the fold is sensitive, and the slightest wound is followed by pain and irritation.

CYST OF THE TONSIL.—Rokitanski, in his *Pathological Anatomy*, and Virchow, in his work on *Tumors*, describe tonsillar cyst as being detected in the dead subject. A number of years ago I observed one of these cysts in dissection. The specimen was exhibited before the Pathological Society of Philadelphia (*Trans. Path. Soc. Philada.*, 1871, iv. 68). The committee to whom was referred the specimen made the following report: "The tonsil showed the marks of chronic inflammation, the interfollicular connective tissue being slightly increased and indurated. The follicles of both tonsils, instead of presenting the usual round or oval shape, were distended into large, irregular, star-shaped crypts. In these crypts, where the contents had not been previously evacuated, were found retained masses of disintegrated epithelium, fat-granules, and crystals of cholesterin. The occlusion of the orifice of the glands and the retention of their secretion had given rise to the formation of cysts."

A short time ago I had an opportunity of recognizing a tonsillar cyst in the living subject. The case did not present any unusual appearances, but excessive pharyngeal irritation of long standing was complained of, and the left tonsil being larger than the other I determined

to excise the cortex and explore the interior, since I was of the opinion that a number of the diverticula had been closed by inflammation. Greatly to my surprise, following the excision a large quantity of glairy fluid escaped, as though the tonsil had been converted into a cyst. Exploration revealed the presence of a rounded chamber the size of a small chestnut. The irritation immediately disappeared.

ACUTE ABSCESS.—Opening an acute abscess of the tonsil, whether it be directly in the substance of the gland or in the tissue about it, is occasionally a procedure requiring judgment and patience. As a rule no difficulty is experienced, but in exceptional cases the attempts are annoying to the physician, painful and depressing to the patient, and not free from danger. Fortunately, the usual incision with a straight knife thrust into the centre of the mass and drawn toward the median line of the throat is generally successful. But pus is never to be sought for in a single locality. The incisions are frequently made too high and the palatal structures needlessly wounded. If the abscess occurs in the velar portion of the tonsil it cannot be reached at all by any prudently devised incision. The pus, when in the main gland, may not point toward the surface, which is visible, but backward. I have seen cases where three deep incisions had been made without success, when a fourth showed that the pus lay in the posterior part of the gland as above indicated. In another instance the pus lay well down on the side of the pharynx below the curve of the tongue and was reached only by an incision with a laryngeal knife. All these peculiarities are easily explained when the anatomical variations in the form of the tonsil are borne in mind. The abscess is sometimes lodged well to the outer and upper side of the main tonsil, above the position in which the pocket is usually found. If an opening to a crypt is demonstrated, a curved probe or director should be passed along it. Not infrequently the collection of pus can be thus emptied into the throat and the patient saved the pain of an incision. I have seen several cases months after an ordinary attack of quinsy in which these pus-tracks could be easily traced. The fact that they may lie in free communication with normal openings is noteworthy from several points of view. They demonstrate that in suppurative tonsillitis the pus is not always peri-tonsillar (since it may be retained in the crypts and diverticula of the mass), and that spontaneous openings of the collection may not end in recovery if the shape of the parts do not favor drainage.

Respecting the danger of opening a tonsil abscess, it must not be forgotten that fatal hemorrhage has followed the use of the knife in skilful hands. The risks of not opening the abscess are greater than those attending the incision, and nothing remains for the physician but to operate. The bleeding may arise from a normal artery which has assumed extraordinary proportions under the inflammatory excite-

ment, or from a large ascending pharyngeal artery. Never, I believe, does the blood spring from the internal carotid if the incision be prudently devised. Before making an incision I have been in the habit of placing the index finger of the disengaged hand in the throat and endeavoring to introduce the tip between the tonsil and the posterior wall of the pharynx. The knife should be thrust toward the finger-tip. This manipulation protects the ascending pharyngeal artery and gives freedom to the operator, who, in any event, may dread wounding the pharyngeal wall. That this is no timid precaution is evident. I have notes of peculiarities in three persons, and have knowledge of a fourth, in whom a vessel as large as the radial artery is seen pulsating on the posterior wall of the pharynx. I have advised these persons that in the event of tonsillar incision being proposed that they should inform the physician in attendance that an abnormally large artery lies just beneath the surface of the throat-passage directly back of the tonsil.

CHRONIC ABSCESS.—Retention of pus for an indefinite period is unusual, and I invite attention to a few remarks on the subject.

A gentleman, aged fifty-six years, had had for ten years an excessively irritable pharynx. In this period, two acute attacks of inflammation were reported, the first of which was severe. The patient was rheumatic, although there was no history of acute rheumatic fever. Distress was referred to the left side of the throat; the membranes here were more injected than on the right side. A mild form of pharyngeal catarrh was present with laryngitis. The tonsils were small. After the patient had been under treatment for a month without relief, I determined to remove a portion of the left upper tonsil; with this object in view, I cut away a portion about the size of a split pea. Pus to the amount of four or five drops escaped; at the next visit, two or three days after, the parts were greatly improved, and in a short time all signs of the trouble ceased.

A second case illustrating chronic pus-retention was that of a medical student, nineteen years of age. He was suffering from laryngitis, and had always had irritable tonsils. He had suffered from repeated attacks of diphtheria when a child. The present distress ensued upon a rather severe form of tonsillitis. Believing that much of the condition of the larynx was due to irritation excited by the tonsils, I removed a portion of the main mass on the right side with the knife, when there escaped fully a half-drachm of pus. The tonsils were of great thickness, and the pus lay fully three lines from the surface. The patient made a satisfactory recovery. The laryngitis spontaneously disappeared, showing that it had been caused by the irritative effects of pus in the tonsil.

J. Garel (*Annales des Maladies de l'Oreille et du Larynx*, 1889, p. 1) narrates three cases of chronic abscess of the tonsils. The first of these was a man forty-six years of age, who reported January, 1885; he developed an acute tonsillitis on December 7, 1884, which was opened on the 10th, and again on January 31st, so it will be observed that the duration of the case, including the date at which pus was supposed to have formed, was but seven weeks.

The second case was that of a woman, aged twenty-eight years, who

had had her tonsils removed by tonsillotomy in infancy; she had subsequently repeated attacks of quinsy with attendant suppuration on the left side. In January, 1885, quinsy, resulting in suppuration on the right side; after the escape of pus, however, the pain did not subside, and the patient could not report. The neck was found to be tumefied; dysphagia intense. The case passed from observation, but it was ascertained that a month afterward, namely, at the end of February, an abscess opened spontaneously, and the inflammatory condition rapidly subsided. The entire duration of this case appears to have been about one month.

In the third observation, that of the young man, aged thirty-six years, who reported September 21, 1888, the patient was subject to repeated attacks of tonsillitis, and at the twelfth year had an attack in which both tonsils suppurated. In 1883 acute abscess developed in the right tonsil, which demanded surgical interference. In August, 1888, tonsillitis developed on the left side; the physician opened the collection of pus on the seventh day, but the cure was not completed; three weeks afterward pus could be still detected oozing from the tonsil. The opening in it was enlarged by Dr. Garel by the galvano-cautery. As a result of treatment by this agent, the case was cured by the 20th of October; this case, therefore, had a duration of two months.

M. Noquet (*Revue de Laryngologie, d'Otologie, et de Rhinologie*, 1888, No. 7, p. 393) reports a case of a person, twenty years old, who suffered for six months with acute pain in swallowing at the level of the left tonsil. Many times a day the patient would raise pus which could be traced to the tonsil. This patient had had the right tonsil removed at the sixth year, and the left six months subsequently to the time at which the case came under notice. Dr. Noquet detected in the left tonsil a fistulous track which led to a pocket which contained pus, which, being opened, led to complete recovery. In the discussion which followed, M. Moure cited an analogous case, namely, one with abscess of the tonsil, lasting several years, finally cured with the galvano-cautery. Heryng names two cases in which abscess was detected during operation by tonsillotomy.

Grynfeldt (*Gaz. hebdomadaire des Sci. Méd. de Montpellier*, No. 34, 23 Août, 1884) reports a case of chronic abscess of the tonsil which occurred in a man seventeen years of age, the result of acute tonsillitis.

FOREIGN BODIES.—The practitioner is frequently called upon to remove foreign bodies from the pharynx. When these are large the most casual inspection reveals their presence. Frequently, however, examinations carefully conducted fail to detect them. The conclusion is arrived at that the objects have been either swallowed or ejected, and the symptoms complained of are referred to the effects of congestion or to the anxiety of the patient. It must not be forgotten that small fish-bones may be lodged within the tonsil and be out of sight when the throat is inspected, but may protrude during the acts of swallowing and speech.

A gentleman once reported to me with the complaint that a fish-bone was fixed in his throat. The history was consistent, and a careful but futile examination had been made by the family physician. I was

equally unfortunate in not finding the offending bone. I ventured to say that it had disappeared, and that the distress could be controlled by the use of a soothing gargle. But in this I was mistaken. The patient reported after an absence of several hours and persisted in his belief that the bone remained in the throat. Finding the right tonsil rather large, I grasped it with a pair of forceps and drew it forward, thinking that the bone might be found between the gland and the palato-pharyngeal fold. Directly, I saw (as a result of compression) projecting from the gland the end of an exceedingly slender needle-like fish-bone, which was readily lifted from its bed by a pair of forceps held in the disengaged hand. The bone was fully an inch in length, and would have remained undiscovered had I not fortunately by the seizure of the gland forced it slightly out of its bed. On another occasion I removed a thin scale of an oyster-shell, which had been in the throat forty-eight hours, from the interval between the upper and the main tonsil. The object was readily seen by drawing the palato-glossal fold forward.

REMARKS.—In conclusion it may be said: That the existence of a large pocket or crypt at the lower part of the tonsil is common; that a mass lies above the thickened cryptose tissue above the opening of the main pocket, and forms the velar tonsil; that the varieties of tonsil-form, as above expressed, constitute the best guide to clinical study of the region; that the treatment of the affections of the tonsil should be based upon structure; that, this structure being of the character of recessions of mucous membrane from the general pharyngeal surface, attempts to restore such parts to their normal condition should be always borne in mind, and all canals or fistulous passages in the tonsil that are abnormal should be slit up; that closed tonsils should be opened; that incisions for the reduction of enlarged tonsils should be in directions which harmonize with the plan of the region; and that, when such hints for the treatment of the tonsil are acted upon, the majority of the diseases of these glands are remediable.

RETRO-PERITONEAL TUMORS: THEIR ANATOMICAL RELATIONS, PATHOLOGY, DIAGNOSIS, AND TREATMENT.

WITH A REPORT OF CASES.¹

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As our experience in abdominal surgery increases, we find there are yet many problems that confront us, and of these problems there is

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none which, to my mind, requires at our hands more careful research and is capable of greater improvement, both in operative management and prognosis, than new-growths arising from the retro-peritoneal space.

The exact diagnosis as to the true nature of these growths may not be so necessary, but a clearer investigation at the post-mortem table and pathological laboratory to determine anatomical relations and physical changes cannot be denied. In order to bring this subject more fully to your attention, allow me to report to you the histories of a few cases which have come under my observation :

CASE I.—Miss S., aged forty-two, consulted me in March, 1882, in relation to a tumor located in the back. She gave a good family history, and, with the exception of this difficulty, had suffered from no important diseases. About fifteen years prior to my first consultation she had noticed a small growth in the back, to the left of the spine, and at the level of the first lumbar vertebra. It grew slowly and gave rise to no particular discomfort until recently, when it caused increased anxiety on account of more rapid growth.

FIG. 1.



(Case I.)

Examination revealed a large tumor attached to the left side of the spine and ribs, and extending into the dorsal region as far as the angle of the scapula. It seemed deeply attached to the surrounding tissues, of a smooth contour, and hard to the touch (Case I., Fig. 1). An operation for the removal of the growth was advised, but declined by the patient.

I saw her several times in the interval between this time and her death, in November, 1888, and at one visit introduced the fine needle of the aspirator into the tumor, when about two ounces of blood was immediately withdrawn. The tumor continued to increase in size until her death, from other causes.

At the autopsy the growth was removed and its origin found in the connective tissue about the left kidney. It was distinctly encapsulated and easily removed ; its blood-supply was abundant, chiefly from its lower border. The tumor weighed eight pounds, and upon section showed abundant stroma having the appearance of fibro-myxoma, with

here and there an apparent area of lipomatous tissue; there were also cavernous spaces. Undoubtedly the needle of the aspirator had punctured a thrombotic cavity containing an effusion of blood. Microscopical examination revealed the presence of fat and myxomatous tissue, with an abundant small, round-cell infiltration into the stroma of the growth. The growth could have been enucleated by the crucial lumbar incision from the kidney, saving the latter.

CASE II.—On May 28, 1889, Dr. I. I. Buckbee, of Fonda, N. Y., brought to my office for consultation a patient with the following history: Mr. H. V., aged forty-one, married, a native of United States, and by occupation a farmer. He gave an indifferent family history: grandfather died of dropsy, father of rheumatism, a cousin of phthisis. Until five years ago patient's health had been good. He then injured his back by lifting a hay-press. The pain following this injury had never been relieved, although blisters were applied and medicines were administered for a considerable period. He had also employed many patent nostrums without relief, and two years ago discontinued all treatment. Three months ago he grew worse, the abdomen began to enlarge, the pain was more severe, he lost both appetite and flesh, the ankles became cedematous, and a distressing cough followed. The bowels were constipated, the urine scanty and high-colored, but free from albumin or casts.

Physical examination. Abdomen was rather more prominent on right than on left side, and to palpation gave an impression similar to that of a lipomatous tumor. Fluctuation could not be elicited at any point. Percussion revealed flatness from the right nipple to the crest of the ilium on that side, and extended to the median line, save in a narrow space along the border of the ribs, where there existed a zone of resonance.

Diagnosis. First, the tumor was manifestly not cystic, nor was it connected with the liver, being separable from the liver border by a distinct line of resonance on percussion. Was it a tumor of the abdominal walls, of the omentum, cæcum, the kidney, or of the retro-peritoneal space? Was it a dislocated liver, localized impaction of feces, or hydatids? Hydatids were excluded by the absence of obscure fluctuation, of nodular excrescences, and the hydatid thrill; fecal impaction by the absence of the doughy feeling, and the ability to secure free evacuation of the bowels. The liver could not be dislocated alone, for there was on percussion dulness over its normal area. The tumor was too deeply seated to have its origin in the abdominal walls, did not move with the respiratory act, nor was its mobility affected by the fixation of the abdominal walls. New-growths of the omentum are, unless cystic, usually diffused with nodules and accompanying ascites. Again, the dulness is often relative, rather than absolute. Was it from the kidney? The urine was normal, but scanty, the dulness extending from the kidney, or rather spine, directly around to the median line. The probability of its arising from the kidney was strong. From the conditions present an exploratory abdominal section was clearly demanded, an opinion which was confirmed by Drs. Ward and Townsend in consultation.

Operation. An operation was done on June 1, 1889, as follows: An incision five inches long was made over the external border of the right rectus muscle, the centre of the incision being opposite the umbilicus. The dissection was very difficult; the landmarks were hard to determine, and I was not quite sure that I had divided the peritoneum,

when the tumor appeared in the wound. The capsule was divided and the tumor-substance appeared somewhat like fat. From its attachments it seemed futile to attempt its removal. The wound in the capsule was closed by catgut suture, and that in the abdominal wall by silk. The patient recovered from the operation and returned to his home June 22; 1889. Small portions of the tumor removed were examined and found to consist of fat-cells enclosed in a network of connective tissue. Numerous small, cellular elements were found in the stroma of the growth. The patient after his return home was relieved of his pain for a considerable period. The wound at the time of the operation did not close kindly, and later reopened, a portion of the tumor presenting in the wound as a fungoid mass. The relief from pain was undoubtedly due to the incision of the capsule, thereby relieving the tension. The growth continued to increase very decidedly, the legs became œdematous, respiration from the encroachment of the tumor became very much embarrassed, and finally, on October 21, 1889, the patient died.

Autopsy, held at Fonda, N. Y., twenty-seven hours after death. Body very much emaciated; rigor mortis well marked; thorax and abdomen only examined. Abdomen much enlarged, especially upon the right side. An incision from the intra-clavicular notch to pubes was made, passing in a curve to left of umbilicus. A second incision was made above the fungoid mass, separating it from the abdominal wall. The diaphragm was situated on the level with the fourth rib, on the right side, and not quite so high on the left. To the right of the vertebra the abdomen was filled by a large growth encapsulated and having the appearance of adipose. All the viscera were displaced to the left. The sternum was removed and both lungs found compressed, but otherwise healthy. There were no adhesions of the pleura. Each pleural cavity contained a small amount of serum. The more particular examination of the growth showed its origin to be posterior to the peritoneum and carrying it forward and inward. Externally it was continuous with the abdominal wall. To its median internal surface the cæcum was attached, the mesocæcum, if any, being obliterated. Superiorly the liver had been displaced to the left, and the right lobe was intimately adherent to the growth. The tumor was enucleated as follows:

The peritoneum along the inferior border was torn through and the tumor lifted up toward the thorax, dividing the peritoneum along the internal border of the growth. The right kidney was attached to the tumor and removed with it, after dividing ureter and renal vessels, which were much dilated. The renal vein, approaching the size of the vena cava after removal, lay completely posterior to the peritoneum. Liver smaller than normal from compression; gall-bladder empty and compressed; spleen normal in size, color, and consistence; left kidney slightly enlarged, but normal; right showed evidence of fatty degeneration. Omentum shrunken, free from fat; stomach dilated; intestines not distended and normal in appearance.

The growth (see Case II., Fig. 2) weighed fifty-six pounds, and later was divided in its length. Upon division a considerable amount of fluid escaped from numerous cysts. Examination of the cut surface showed many centres of softening, where the growth was myxomatous in structure. The external portion of the growth was of a firm consistence and resembled adipose in appearance. Portions of it were hardened in Müller's fluid and cut with freezing microtome. For this

part of the work I am greatly indebted to my assistant, Dr. Willis G. Macdonald.

Sections prepared from the outer portion were made up of adipose tissue, as were also other small areas found distributed throughout the growth. The softer portions were made up of a connective-tissue stroma, in the meshes of which were many multipolar cells, besides abundant small, round cells. The stroma was relatively very sparingly distrib-

FIG. 2.



(Case II.)

uted. In the growth we had, then, fat, myxomatous tissue, and small, round cells, the characteristics of lipoma, myxoma, and sarcoma. It may be termed an adipose tumor, presenting a condition of myxosarcoma, with sarcomatous infiltration.

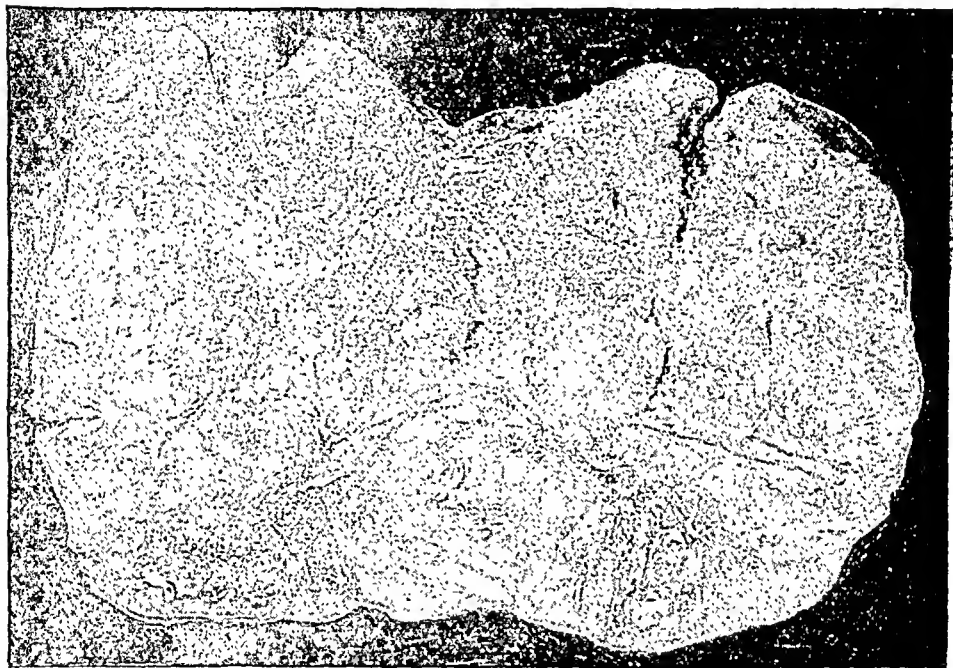
CASE III.—I saw this case in consultation with Dr. H. E. Mereness, of Albany, N. Y., to whom I am indebted for the notes. Mr. N., aged thirty-nine, a brassworker by occupation, began to suffer from vague abdominal symptoms late in 1888, which were attributed by his physician to the poisonous effects of the metal with which he worked. There was a general failing in health, with loss of flesh, strength, and appetite. Early in June, 1889, he found himself no longer able to do his work and went into the country. While there he developed jaundice, and, upon examination, a tumor was found in the left hypochondriac and lumbar regions of the size of a child's head. He returned to the city, where I saw him and verified the foregoing history.

I found that he had suffered from no previous serious illness and had been of fairly good habits. The family history was free from tuberculosis. His father died of cancer of the stomach. He was very much emaciated, and the conjunctivæ were of a yellowish cast, which later deepened to a bronze. An exploration was advised, believing the growth to be connected with the left kidney, but refused by patient. The tumor continued to grow rapidly, and in the latter part of November, 1889, he died.

An abstract from the notes taken at the autopsy showed that the tumor sprang from the region of the left supra-renal capsule and in-

volved it, as well as extending downward and surrounding the kidney. It presented itself forward, dislocating the pancreas and spleen, and by pressure impeded the flow of the biliary secretions into the intestinal canal. It was closely attached to the vena cava and aorta. It weighed upon removal six and one-eighth pounds, and upon section presented gross anatomical appearances, very similar to the case previously reported. Microscopically, there was a greater preponderance of sarcomatous and myxomatous elements. Chemical examination of the fluid removed from the open spaces showed a large proportion of mucin. (See Case III., Fig. 3.)

FIG. 3.



(Case III.)

ANATOMICAL RELATIONS AND PATHOLOGY.

From the histories of these cases, it will be noticed that in two they took their origin from the capsule of the kidney, and in the other from the supra-renal capsule. A careful research of the reported cases, together with an examination of all accessible works on pathology, impresses one that the most frequent origin of these growths is in the connective tissue of the capsule of the kidney; the next most frequent seat being the supra, or impossible to determine with exactness.

Mr. Hulke, of Middlesex Hospital, reports a case of myxoma surrounding the left kidney, which he operated upon. A median section was made, when the tumor presented. The incision was continued

through the posterior blade of the peritoncum, just beyond the descending colon. The tumor proved to be a myxoma, and, although the patient recovered from the operation, it returned locally. The kidney was not involved by the tumor, and could have been enucleated.

The variety of growths embraced in this class present no less peculiarities than do the other features of their natural history. None can be said to be absolutely benign, even those which are made up entirely of histological elements, such as lipoma, fibroma, or myxoma, although they do not tend to the formation of metastasis, or to the infiltration of immediately surrounding tissues. It is true they show no great tendency to recurrence when completely removed, yet from the great size to which they develop, the consequent discomfort, and from their tendency to undergo degenerative changes, they cannot be classed as innocent growths.

As with any large abdominal growth, there is always a degree of encroachment upon the thorax and pressure upon other organs. In Case II., here reported, the inferior border of the liver was at the fourth intercostal space, and the cæcum and ascending colon were displaced toward the left side of the abdomen.

Those springing from the walls of the pelvis encroach upon or involve the bladder, the uterus, and rectum, very often presenting features which are exceedingly perplexing in diagnosis. The origin of a smaller number are reported respectively as from the retro-peritoneal lymphatics, the bodies of the vertebræ and bones of the pelvis, and the root of the mesentery. In by far the greater proportion of the cases no exact origin is given; indeed, from the subsequent changes in anatomical relations, it would seem quite impossible to determine the exact point of origin of many of the very large retro-peritoneal new-growths. They have almost uniformly presented themselves in the line of the least resistance, that is, anteriorly. In the first case which I report, the tumor presented in the back—a condition which can be attributed to its origin from the extreme upper border of the kidney, where it is less completely bound down by the lumbar muscles and fascia. When they have reached a sufficient size to attract the attention of the patient, they present themselves at either side of the umbilicus, somewhere in the region of the lateral lines drawn in the arbitrary divisions of the abdomen into regions, although they may appear centrally. With the growth viscera are displaced, not infrequently completely to the opposite side, although those springing from the left kidney may have the descending colon externally. Owing to circulatory disturbances within them, and their liability to a subsequent malignant infiltration, and from the development of cachectic conditions, they present, clinically, features which are almost immediately hazardous to life.

Cysts have been reported by various authors as arising from the retro-

peritoneum. Czerny reports particularly a case of dermoid cyst springing from the capsule of the kidney. Others have reported cases of similar growths springing from the walls of the pelvis, particularly in the neighborhood of the sacrum. The so-called cyst of the broad ligament is very often partially retro-peritoneal in character.

Cysts in connection with the parenchyma of the kidney and pancreas, together with new-growths springing from the same source, are not considered in this paper, for the reason that they have already received at other hands sufficient consideration.

A careful study of retro-peritoneal tumors shows them to be of a mixed variety, containing the elements both of the lipoma and myxoma—tissues which are, histologically, very closely associated. Fat is developed from embryonal mucin, and in post-fœtal life occupies those spaces in the economy which later in the fœtus are of myxomatous elements.

Again, in the retro-peritoneum both of these tissues are found, and doubtless many of these growths arise, under suitable conditions, from congenital neoplasms. There is, in these cases or classes of tumors, no inconsiderable amount of evidence to support the theory of Cohnheim relative to the origin of tumors. They are sometimes active in their growth, often become cystic, and reach immense proportions. Cases are reported of tumors of this character weighing eighty pounds. The distribution of the elements is very diverse. The fat may be regularly distributed throughout the tumor or may occur as islands located here and there. These growths are very often œdematous, and by chemical analysis present a large percentage of mucin. The microscope, besides revealing the usual elements of lipoma and myxoma, very often reveals a numerous round-celled infiltration in the stroma of the growth, pointing to a sarcomatous element in their character. While not presenting all the features of active malignancy that carcinoma and sarcoma do, yet they often show a marked tendency to recur locally when removed.

Clinical histories and pathological research both show that tumors containing embryonal elements are very apt to be malignant, and can very truly be said to be always so.

The tumors found in the kidneys of young children are, for the most part, mixed tumors, chiefly myo-sarcoma. Many are surely congenital, and are an example of a new-growth developing from embryonal tissue. They have by Grawitz recently been compared to a series of embryonal growths which spring from the supra-renal capsules, and have the appearance of adipose tissue, but are usually sarcomatous. (Orth, *Pathologische Diagnostik*.)

Sarcomas, either in typical form or in combination with myxomatous, lymphomatous, or fibromatous tissue, also occur, and have been observed quite often. Many of the tumors which have been described as sarcoma

of the mesentery were doubtless retro-peritoneal sarcomas, arising at the root of the mesentery and presenting anteriorly, separating its folds.

Primary sarcoma springing from the mesentery is exceedingly rare. In combination with myxomatous growths sarcoma most frequently occurs. They are, histologically, very closely associated. In these sarcomatous growths circulatory changes are likely to occur, thromboses, with subsequent softening and cystic degeneration.

Another group, to which Dr. Homans has called attention in two papers (somewhat defective in bibliography, but otherwise of great value), consists of pure lipoma.

Subserous lipomas rarely of themselves reach large size. However, those going out from the peritoneum may be of sixty pounds' weight. Lipomas are usually slow-growing, the subserous particularly so. Subcutaneous sometimes grow rapidly after remaining stationary for years. Lipomas seldom change to other varieties. May primarily be mixed in character—myxo-lipomas.

The character of this group can never be determined with certainty without careful microscopical examination, as many growths having the appearance of lipomatous tissue often have the elements of myxoma and sarcoma as well. They may reach great size, but show no disposition to return after removal.

Sir Spencer Wells reports, in his first edition of *Abdominal Surgery*, a case wherein the removal of such a growth was undertaken with fatal results.

The other varieties of growths found have been fibroma and cystoma. They all, for the most part, either spring from the walls of the pelvis or from the sub-peritoneal connective tissue of that region.

Virchow looks upon this whole series of growths as being analogous to those arising from the deep tissue of the neck.

They may have fat, connective tissue, fascia, muscle, or lymphatic tissue for their source. They may be homologous or heterologous in character. There can be no reasonable doubt that embryonal elements, which lie quiescent here, may, under suitable irritation, be a frequent source of retro-peritoneal growths.

Diagnosis.—I cannot well imagine a more severe task for a writer than to attempt to outline the symptoms and diagnosis of a condition which, until the present time, has baffled, quite without exception, the skill of all who have met with it. Yet, recognizing the importance of the factor of exact diagnosis, especially in abdominal surgery, I wish to call attention to all such symptoms as may be associated with these growths, and, after carefully weighing them, put together what seems useful.

In the first place, there is not a single symptom that is pathognomonic, and we are dependent for diagnosis upon the process by exclusion. Diseases and neoplasms of the uterus and its appendages, of the

liver and the gall-bladder, of the spleen, pancreas, and kidney, are to be excluded, as well as aneurism of the aorta, tumors of the mesentery, and of the abdominal walls.

Sex or the history of the case may exclude the organs of generation at once, and bimanual examination will rarely fail to locate the uterus and its appendages and determine its pathological changes. Sub-peritoneal fibroids are the only ones likely to be confounded with this condition; but, then, uterine fibromas are more easily movable within the abdomen, and their attachment to the uterus can be made out. Solid tumors of the ovary and broad ligament present greater difficulties, which at times cannot be surmounted.

Diseases of the liver, together with new-growths of that organ, have very often been mistaken for retro-peritoneal neoplasms. Hypertrophic cirrhosis, amyloid degeneration, hepatic abscess, hydatids, obstruction of the cystic duct, and distention of the gall-bladder, together with carcinoma and sarcoma, present physical signs which may be confounded with retro-peritoneal tumors. The history of the case, together with a painstaking weighing of general symptoms, will naturally assist in clearing a doubtful diagnosis.

Disturbances of biliary excretion may occur from pressure on the common duct by the tumor. Again, tumors of the liver always move synchronously with the respiration. Retro-peritoneal ones do not, as a rule. Very often a line of resonance is found between liver and tumor, which at once shows that the growth is not connected with the former organ.

The differentiation from hypertrophy and tumors of the spleen presents less difficulties than those of the liver. Here palpation and percussion will be quite sufficient, if employed to locate the spleen in its normal position. Tumors of the omentum lack the fixed position of these growths. The absence of digestive disturbances, with fatty stools, will serve to exclude the rare new-growths of the pancreas.

As stated, many of these tumors have their origin in the capsule of the kidney, or in the connective tissues surrounding it. They present, at least in their earlier stages, physical signs differing in no respect from tumors of the nephritic parenchyma. An examination of the urine may give an exact clue to the diagnosis. In none of the cases reported had renal hemorrhage or albuminuria, with or without casts, occurred—conditions which are the rule with tumors of the parenchyma of the kidney.

Regarding the use of the aspirator, while I must admit that it was of no especial value in the diagnosis of my first case, yet I believe that in many instances the fluid withdrawn by this instrument, and carefully examined, would enable us to make a diagnosis as to classifications of the tumor. In a recent case of sarcoma of the kidney, by means of the

medium-sized needle I was able to draw off sufficient fluid to fully demonstrate the nature of the growth, the diagnosis being confirmed later by the autopsy. All things considered, I believe the instrument is of value in the diagnosis of retro-peritoneal tumors.

Finally, a valuable adjunct to diagnosis (a suggestion made to me by my assistant, Dr. Macdonald, and employed by him) is the rectal insufflation of hydrogen gas, with the distention of the stomach, which I believe to be of service more especially where a careful examination has been made before, and the percussion areas have been outlined with care upon the abdomen. The process of insufflation should be carefully watched, that the relation of the intestinal tube to the tumor may be established.

Prognosis.—Without operative interference there is but one termination. The rapidity of the fatal termination varies somewhat with the character of the growth. Pure lipomas are slow-growing until a certain volume is reached, when they proceed with great rapidity to a fatal termination. From a study of the clinical histories found in the literature, I am of opinion that the mean duration of life, after the discovery of the tumor, is not more than nine months. Operative treatment offers to us much promise. Recovery has followed the removal of retro-peritoneal tumors of great weight, even those weighing fifty pounds. The immediate mortality following operations is from necessity great, yet from the hopelessness of the conditions it is to be urged with great earnestness upon the part of the surgeon. Incomplete operations have been immediately more fatal than those in which the tumor had been completely removed. Like all surgical lesions, these cases illustrate the necessity of early diagnosis and prompt operation.

Czerny, in concluding a paper in which he had reported three cases, concludes that "in all cases operative interference can be safely undertaken; that when the tumor is no longer encapsulated, the incision had better be closed, otherwise the growth enucleated."

Treatment.—Operations for the removal of retro-peritoneal growths will from necessity be subjected to considerable modification in detail. The choice of incision will usually fall in the line of the linea semilunaris, on one side or the other; Langenbeck's incision for the removal of the kidney may be made use of. Frequently when the incision is at first exploratory, it must be median. When the anatomical relations can be made out, and the operation continued by an extension of the cut, then the more favorable incision is in the linea semilunaris. By the separation of the peritoneum from the internal border of the tumor, it may be attached by sutures to the internal border of the abdominal wound, making the whole field of the operation extra-peritoneal.

The incision of the posterior fold or blade of the peritoneum should be external to the attachment of the mesentery of the colon, although

not absolutely necessary. The removal of the growth by enucleation must be accomplished with great care; particularly is it always desirable to determine the source of the blood-supply and its relations to the great vessels. The vena cava has been wounded by accident in the enucleation of these growths. There are likely to be large, thin-walled veins located deeply in the wound requiring ligation. It will be found at times necessary to remove the kidney with the tumor, and here the danger of hemorrhage is very great. The supply vessels of the kidney will frequently be found very short and difficult to reach.

The length of time required for the performance of the operation will vary necessarily. As long a time as two and one-half hours have been consumed in a difficult operation. As in all strictly abdominal work, the operator must be prepared for any and every possible complication.

After enucleation, as well as when the kidney has been removed with the growth, the cavity must be thoroughly drained, either by full-sized drainage-tubes or by iodoform tamponade.

The after-treatment presents no indications for management other than those of a severe case of abdominal section.

Résumé.

In Case III. the operation would have been a very dangerous one, because of the tumor having adhesions to the aorta and vena cava.

As in all other conditions in surgery, there is certainly at the present time a better understanding of these cases. A more correct and early diagnosis, as is the case in all that pertains to medicine and surgery, will surely bring a larger percentage of recoveries.

These are purely surgical cases; no medicines, no mineral waters or baths, electricity, or other lines of therapeutics, have as yet been of any service.

Finally, if in any way I have added but a mite to the better elucidation of the subject, I shall feel amply repaid for the effort made.

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THE DIAGNOSIS OF ONE FORM OF INTRA-CRANIAL SYPHILIS.¹

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THE literature of syphilis is enormous, and probably equalled by that of no other subject in medicine except tuberculosis. Writing some years ago upon the subject, I made this comparison: Prof. Max Müller, the well-known philologist, informs us that the whole of the Sanscrit literature, running, as he expresses it, like a high mountain-path of literature through the whole history of India, and extending over a period of three or four thousand years, is contained in about 10,000 manuscripts—more, the same authority asserts, than the whole classical literature of Greece and Italy put together. I have been able to count up some five hundred different articles that have been written on the subject of syphilis in the last thirty years, and there are probably many more. This is one-twentieth of the whole Sanscrit literature or of the combined classical literature of Italy and Greece, and therefore in order that the literature of this one subject should equal these great national literatures it would only take the time of about six hundred years, or one-seventh to one-fifth the time of the Sanscrit writings.” Notwithstanding the vast interest in the subject, however, that is manifested by these figures, the diagnosis of syphilis of the nervous system is still in a state of great uncertainty. The pathological lesions of the brain, of the cord, and of the peripheral nerves have been well studied, so that I need not pause to dwell upon them before an assemblage of this nature. But the clinical symptoms of these pathological alterations are involved in considerable uncertainty unless there has been a clear history of the initial syphilitic lesion, and of its sequelæ in skin, bones, and mucous membranes. For example, we may be able to affirm that we have before us the symptoms of an intra-cranial, a spinal, or a peripheral nerve lesion, because our knowledge of diseases of the central and peripheral nervous system has advanced to great certainty within the last few years; but when the further question arises as to whether this lesion of the brain, the spinal cord, or the peripheral nerves is due to syphilis, we must in the vast majority of cases fall back upon the history of the initial lesion or its sequelæ, or wait for the proof that may be contained in the success or non-success of treatment by iodide and mercury. Unfortunately it is a fact that the history of the initial lesion or its sequelæ is often very difficult to obtain. The primary sore being very slight, it may easily be overlooked, as we all know, by one who is not aware of its

¹ Read before the American Neurological Association at the Congress of American Physicians and Surgeons at its meeting in Washington, September, 1891.

characteristics; and this may even happen to one who is upon the alert, as all syphilographers will testify. The wife may be infected by the husband, and innocently enough, too. Several years ago I heard a lady telling some friends how she had been afflicted with an obstinate headache and subsequent inflammation of the eyes, and as I knew that this lady's husband had died a short time before of intra-cranial syphilis, I went to her attending physician to inform him of the fact, and found him entirely ignorant of the etiology of his patient's symptoms. The infection may also come through a surgical operation, so that I presume there are very few communities of any size in which physicians cannot be found who have infected themselves in this way; indeed, I know at the present time of four physicians of whom this is true. Or the infection may come through a lesion innocently acquired about the buccal cavity, and even perhaps through articles of clothing. The tendency to concealment, which so often actuates patients from motives of shame and family pride, constitutes another great source of error for the physician. It is therefore apparent that some method of diagnosis independent of the history of the initial lesion and its sequelæ would be of great value, and all recent writers upon this subject have recognized the need, although no one has ventured to outline any pathognomonic symptoms. Rumpf's great book of some 600 pages, published in 1887, casts absolutely no light upon this question of positive diagnosis of syphilitic nervous affection, although it is a most industrious and painstaking compilation of pathological, clinical, and therapeutical memoranda. For many years I have been keenly aware of this defect in our clinical knowledge, and I have been endeavoring to obtain some further light upon the subject, which I am now prepared to definitely offer to the profession, and to which I first called attention some four and a half years ago in a paper read before the Philadelphia Neurological Society.¹ I have become convinced that in many, if not most cases of intra-cranial syphilis the following group of symptoms is to be obtained: namely a cephalalgia that is apt to be peculiar in a quasi-periodicity that manifests itself in a tendency to return at a certain time in the twenty-four hours, most frequently at or towards night, less frequently in the afternoon or morning; marked insomnia, usually at the outset, lasting a few weeks; a sudden cessation of the cephalalgia and insomnia upon the supervention of any paralytic or convulsive symptoms. Hemiplegia in an adult individual under forty years of age, even when not confined with the foregoing cephalalgia and insomnia, is also, in my opinion, apt to be syphilitic, exclusion being made of trauma, tumor, and nephritis. Through a period of some eight years I have satisfied myself of the value of this symptom-group. I have demonstrated its correctness many times to my classes, it has been verified in my clinic by my

¹ Medical News, July 9, 1887.

assistants, and I shall detail histories of twenty-seven cases, although I have as many more that I cannot see the use of recounting at length.

In one case, Case IX., there was no history of insomnia, but this is an exception proving the rule.

CASE I.—Male, aged thirty-nine years. About six months ago he began to have severe headache which was frontal, and which has lasted ever since, but shifts from one part of the head to the other, being gone on some days, but never leaving him throughout one single day. Has had emesis only on the first day. For the first month he did not obtain more than three or four hours' sleep each night, but has since then slept well. A careful microscopical and chemical examination detected no renal lesion, nor has he any outward symptoms of such. During the first six weeks it is said he had a shuffling gait. About six months before coming to me it was noticed that he had a distinct lisp in his speech. He has used both tobacco and liquor excessively, but has ceased using either for some eight months. Has at times been mentally confused, but not during the last six months. At the first onset of the affection he acted very flightily. The face flushes readily. There is no tremor of the tongue, facial muscles, or extremities. Has optic neuritis which is well marked upon one side. Before coming to me he had been for some time under the care of Dr. R. W. Taylor, who kindly writes me that he could detect no evidences whatever of syphilis. The patient, however, admitted that he had had a chancre, although he knew of no sequelæ; and the vigorous iodide and mercurial treatment to which Dr. Taylor subjected him cured him, for after coming under my care I did nothing more than give a few placebos, and yet he made an excellent recovery, which has now persisted for three years.

CASE II.—Male, aged twenty-nine years. Has been ill for six weeks, although it is stated that there had been for a long time certain prodromal symptoms, of which I can obtain no definite description. He imagines that his fellow workmen conspired against him, that he is going to be taken away, that the cat has brought bad luck; wishes to get away, and gets up imagining he hears carriages at the door, brought there to remove him. He has been complaining for over four years. Has been intemperate in his habits until some three years ago. He was sent to me by Dr. J. C. Kennedy, of Brooklyn, who writes that he had syphilis, and that four years ago he had a chancre, the only sequel of which was the characteristic sore-throat. Patient tells me himself that about six weeks before coming to me he began to get confused and worried, and then had his delusions, from which he says he has recovered. Then had optic hallucinations of darkness mixed with lightning, but no auditory ones. At the outset of the affection he had severe headache coming on at night, and obstinate insomnia. Exactly how long these symptoms lasted I have been unable to ascertain. Face flushes at times greatly, has had temporary difficulty in speaking, and during the last two weeks it has been noticed that he stumbled in walking, especially when he got up in the morning. The night before coming to me he had a slight convulsion, consisting of slight loss of consciousness and drawing back of the head and eyes, and slight sidewise movements. There is a neurotic heredity. The retinae are perfectly normal except that there is some fulness of the vessels in the left fundus. None of the

cranial nerves are affected. There is no tremor of facial or tongue muscles or of the extremities, nor any paresis. The tendon reflexes are abnormal in that they are somewhat spasmodic, although not exaggerated in the extent of the knee-jerk. The patient improved somewhat on large doses of iodide with mercurial inunctions, but then passed away from Dr. Kennedy's observation.

CASE III.—Male, aged thirty-five years. Had a hemiplegia in 1884, with slight motor aphasia, from which he incompletely recovered. Had another in 1886 with more marked motor aphasia, from which he has also incompletely recovered. A violent cephalalgia preceded the first attack, was greatly diminished upon the supervention of the first hemiplegia, disappeared entirely in three days, and was absent for about eight weeks, when it appeared again temporarily, no cephalalgia preceding the second attack. Also had obstinate insomnia preceding the first attack of hemiplegia, this lasting about ten weeks. At the present time is paretic upon both sides, the result of his double hemiplegia. I have had this patient under my observation for some three years, and can therefore state positively that his mental impairment consists only of an occasional emotional condition and a tendency to great irritability. He has had no implication of the cranial nerves, and no vesical, rectal, sensory, or spinal symptoms. One pupil is much larger than the other and responds very sluggishly to light, but fairly well to accommodative movements. This patient had a chancre in 1880, followed by roseola, and was under the care successively of several physicians of eminence who made a diagnosis of syphilis at the start and treated him for such.

CASE IV.—Male, aged forty-three years. In 1890 this patient had severe cephalalgia over the brows, generally in the afternoon and toward evening, and obstinate insomnia, the headache and insomnia lasting about three weeks. At about the same time he became very vertiginous, these attacks of vertigo coming on suddenly and rendering him temporarily very ataxic. For over a year has suffered from amnesic and ataxic aphasia and still seems doubtful in his memory of the pronunciation of certain words, although a certain part of his speech-defect is due to the fact that he has always stuttered. His general memory had been excellent for about a month before coming to me. There is no paralysis or ataxia of upper or lower extremities, no implication of cranial nerve, no impairment of sensation in the face or extremities, no tremor of the face, tongue, or extremities. He states that he was deaf about six weeks before coming to me, although now there is no impairment of hearing. The optic discs are normal. Tendon reflexes are absent even with the Jendrassik method. Early in the winter of 1889 he tells me that he had what was diagnosed as a chancre, and he now has a characteristic scar of such. A few months afterward, he states, he had a sore-throat that was attributed to syphilis and relieved by means of mercurials. His headache began about eighteen months after the chancre. This patient had been treated with small doses of the iodide of potash, the doses in the twenty-four hours not exceeding twenty grains, and then sought relief in vain at the Hot Springs, being worse on his return from this trip than he was before he left. I put him immediately upon large doses of the iodide, running up to 150 grains in the day, when he commenced to improve rapidly and has been perfectly well and able to attend to his business

during the six months that have since elapsed, although he has lately begun a reduction of his iodides.

CASE V.—Male, aged thirty-one years. Seen in consultation with Dr. D. G. Bodkin. The patient frankly admits that he had chancre about two years ago, although he is not able to give a very definite description of it; there is a characteristic scar upon the penis. I have not been able to ascertain whether he had had any cutaneous sequelæ or not. He has had occasional headache through the last year, at times violent, almost invariably toward evening, with great insomnia and irritability. Dr. Bodkin was only called in to see him about a fortnight before the consultation, when he was suffering from ptosis of the left eye without strabismus, and this was relieved promptly by ten grains of iodide three times daily. The patient was lying in bed, his face much flushed. There was considerable hebetude and thickness of speech. He could not pronounce at all the words "riding, cavalry, brigade." Pupils well dilated but responding sluggishly to light and accommodation. Both retinæ distinctly congested. The left lid droops slightly, right face is paretic, the tongue points straight, the hand-grasp on the right is decidedly weaker than upon the left. There is no paresis in the lower extremities. The right tendon reflex is slightly exaggerated, although the left is normal. The sensory examination was unreliable because of the patient's hebetude. The cephalalgia is extremely severe. The bladder is paretic. He sways markedly in standing with his eyes closed, whether his feet are approximated or separated. No tenderness upon percussion of the scalp. I recommended inunctions of the unguent. hydrargyri and large and increasing doses of the iodide. Under this treatment, so Dr. Bodkin subsequently wrote me, the patient immediately began to improve, and eventually made an excellent recovery, the details of which, however, I am not able to state.

CASE VI.—Female, aged forty years, married. Has given birth to four living children, two of whom died in infancy, and has had two or more miscarriages. Family history is negative. The patient has never suffered from serious illness. Her present condition began to develop about a year before coming to my clinic, with pain in the lower jaw. She had had for several weeks headaches coming on toward night, with marked insomnia, but these were distinct from the pain in the jaw, which latter was intense in degree from the first. Two molars were extracted without benefit, the pain increasing, the right upper jaw and right temporal region becoming involved for about five weeks, when the pain ceased abruptly. Simultaneously with its appearance was noticed a numbness corresponding with the areas into which the pain had previously extended. The numbness was followed almost immediately by paralysis of the right side of the face. The angle of the mouth was drawn down, the facial expression became changed from a loss of the labial folds, there was lagophthalmus even during sleep. There was a loss of power in the muscles of mastication, and the food lodged in the cheek pouch. There has not been any pain since the onset of paralysis. Two months after the onset vision became misty. The eye began to look hazy and keratitis neuro-paralytica set in. In the course of three months vision of the right eye became reduced to a faint perception of large objects only as dim shadows. An examination of the patient at this time showed right facial paralysis involving the seventh nerve in all its branches, as described above; hearing also somewhat impaired

in the right ear; no involvement of the palate; impairment of the pain and tactile senses of the trigeminus; the motor branch of the fifth supplying the masseter and temporals was also involved; taste was impaired at the posterior right side of the tongue, and there was corneal ulceration. The first nerve was intact. The third, fourth, and sixth nerves were not affected. The lesion, therefore, affected only the fifth and seventh nerves. There was a reaction of degeneration in the seventh nerve. A diagnosis was made of lesion of the Gasserian ganglion, probably syphilitic, the latter diagnosis being made upon the evidence of the miscarriages, although it was not possible to get the husband to come to the clinic or give any history, and also upon the headache and insomnia. She began to improve at once upon the iodide of potassium, which was pushed until 250 grains were given daily, and at the present time, one year after the treatment began, sensation is almost normal, the paralyzed muscles have almost entirely recovered, although the eye has, of course, remained the same.

CASE VII.—Female, aged thirty-three years, single. Has had headache for three months, worse at the vertex; severe insomnia for the first six weeks of this time; has had mucous patches on the tongue and lips, and throat shows old pharyngeal ulcers, whilst the tongue is ulcerated in its posterior portion; has hallucinations of sight and hearing, chiefly at night. Is very nervous and excitable, but has no delusions. This patient came to the clinic only once, and the subsequent history I do not know.

CASE VIII.—Female, aged fifty-three years, married. Has occipital headache, worse toward evening. Suffers from severe insomnia, and has had both these symptoms for some time, although the history does not state the exact period. Has slight ptosis upon the right side; no strabismus and no pupillary implication. This patient made a perfect recovery in three months under treatment by large doses of the iodide.

CASE IX.—Male, aged thirty-seven years. About six years ago began to have constant headache over the brow and occiput, with diplopia. There was no insomnia and no irritability of temper. Four years ago became hemiplegic on the left side, with motor aphasia, without loss of consciousness, when the headache ceased, although this headache returned in the course of a year. Says that he had been weak and tremulous in both legs before the occurrence of hemiplegia. The aphasia lasted about three weeks. Two weeks after the onset of the hemiplegia the arm and leg began to improve, when the right leg became affected. At the time of coming to the clinic, four years after the onset of the hemiplegia, he was paretic in both lower extremities, most in the left one. The hand-grasp was much diminished on the right, but fairly good upon the left. Both patellar reflexes much exaggerated and spastic. Foot clonus present on both sides, tongue deviates slightly to the left; the left naso-labial fold is lost. The pain, muscular, temperature, and tactile senses are intact. He suffers greatly now from headache coming on toward the evening and lasting through the night. Freely admits that he had syphilis ten years ago, but gives no history of any of its sequelæ. This patient first came to my clinic on November 20, 1889. He was put upon a saturated solution of the iodide of potassium, taking 30 drops three times a day, each dose to be increased daily by 5 drops. By December 16th he had attained to 50 drops at each dose, but had such marked symptoms of iodism that it became

necessary to discontinue the treatment temporarily, although the headaches were very severe, and remained so in spite of the treatment by opiates and bromide. On January 13th he was again put upon a saturated solution of the iodide of potassium, 15 drops three times a day, the dose to be increased by one drop each dose. By January 17th his headaches were materially improved. He was then taking 20 drops of the saturated solution three times a day. On February 24th his headaches had entirely disappeared, and he walked somewhat better. Is now taking 36 drops of the saturated solution three times a day. On April 14th, "is much improved, walks much better, has no headaches; feels much better; is now taking 40 drops three times a day." July 2d the patient was so much improved that he was again at his work as a street-car conductor, which he had been obliged to leave some time before coming to us. He walks fairly well, although he is still somewhat paretic, has had absolutely no headaches, his appetite is good, and he looks well.

CASE X.—Female, aged thirty-two years, married. Three months ago awoke in the morning and found her right upper extremity completely paralyzed, followed by severe pain from the elbow to the fingers during two days. Neither speech, face, nor leg were affected. Has been subject to headaches for several years, and has also had obstinate insomnia occasionally throughout this time. Patient has never had alopecia. There is no adenitis or history of throat trouble. Has never borne any children, but has had two miscarriages; has been married two years. Headache disappeared upon onset of paralysis. Right arm and leg are now paretic without sensory implication. The facial muscles are slightly paretic on the right side, and the tongue is slightly deflected to that side. Right patellar reflex somewhat exaggerated. Subsequent history of the case is not known.

CASE XI.—Male, aged fifty-two years. Has suffered from severe headache for the last six months, so severe as to render him almost wild, with great insomnia. The headache is principally over the brow and vertex. Frankly admits syphilis about twelve years ago, but gives no history of any of the sequelæ except that he has had ostitis of the humerus and radius. The headache and the insomnia disappeared entirely in about six weeks upon the administration of the iodide internally in large doses and inunctions of mercury.

CASE XII.—Male, aged thirty years. Onset about two years ago, with noises in the left ear like the singing of a teakettle. At this time was employed in blasting, in which dynamite was used. These noises, after a time, seemed to him to be voices calling his name. He has also suffered from severe pain and tingling numbness down the legs and in the hands and arms. Occasionally has vertigo. Suffers greatly from insomnia. Has not been intemperate, and has found that beer or liquor makes the noises worse. Denies syphilis, nor is there any objective evidence of it, but he admits that he has frequently had chronic ulceration of the throat and sores on the lips, with shin pains, as well as alopecia, also stating that he has had œdema of the feet, ankles, and hands. There is no cardiac disease and no evidence of nephritis. Lying down increases his vertigo. There is no pupillary impairment, no static or motor ataxia. At times becomes unable to find the words he wants to use, and this symptom seems to be so severe as to deserve the name of temporary aphasia. The patient recovered completely upon large doses of iodide.

CASE XIII.—Male, aged twenty-six years. About three months ago found himself hemiplegic on the right side on waking up in the morning about 5 o'clock. Speech was also affected (motor aphasia) for about three days. Face became very much improved in the first week, and the leg somewhat in about two weeks, and at the present time is paretic on the left face, tongue, arm, and leg, and exaggerated tendon reflexes. Patient admits syphilis seven years ago. Had some sort of eruption afterward over the chest and abdomen, and subsequently alopecia. Has never had headache nor suffered from insomnia. Has not been intemperate. There is no history of any traumatism. Patient's subsequent history is unknown.

CASE XIV.—Female, aged twenty-nine years, married. Has had severe headache for several months, worse toward evening, with marked insomnia. Is very nervous and excitable; says that she sits continuously through the day thinking of queer and unnatural things. Has a sensation of numbness and creeping over the scalp, and is at times slightly deaf for a day or two, although there is nothing about the ear or the throat or the Eustachian tube to account for this. Has had five miscarriages—at the fourth, fifth, and seventh months respectively. Has one child living, but child is healthy. Patient has had buccal ulcers, and her hair has been coming out freely for some time. This patient recovered perfectly in about two weeks upon the iodide.

CASE XV.—Male, aged twenty-eight years. Seven years ago patient had syphilis, and was under treatment for it for some time, although the secondary symptoms were mild. Three years ago had to give up his position in a restaurant as a waiter on account of his failure of memory, which symptom began to develop about one year after syphilitic onset. Patient states that he never had headache, but his friend tells a different story, and says that he used to complain often of headaches. He has had obstinate insomnia for some time, and frequently lies awake all night, though not complaining of pain. Patient has marked impairment of memory, frequently becomes so confused as to be almost speechless, though he suffers from no definite type of aphasia, the speech-defect being very evidently due to the mental impairment. He can name objects held up before him correctly, can read written or printed language and understand spoken words, but is unable to spontaneously and quickly recall names of friends and intimates. Is not able, for instance, to give the name of the friend who accompanied him, although he has known him for twenty years. Says his own first name is John, but cannot give his last name. Has never had any paralytic symptoms. Patient's expression is silly; says he likes everybody, and has no enemies except a former wife. There is no ataxia, motor or static. No tremor of face, tongue, or extremities. No facial asymmetry, no implication of the cranial nerves, no pupillary abnormality, and no paresis. This patient was afterward pushed to 200 grains of the iodide of potassium in the day without benefit.

CASE XVI.—Male, aged forty years. Mother had a slight paralysis, nature unknown. Patient had a chancre eighteen or twenty years ago. Five years ago he had a slight hemiplegia on the right side, with motor aphasia. Before the attack had suffered from evening headaches and considerable insomnia, but these disappeared suddenly when the attack came on. On coming to my clinic patient displayed right hemiplegia

still marked, and slight motor aphasia, with exaggeration of both patellar reflexes, especially the right; the left pupil sluggish in its reaction to light. The patient has only improved moderately under the iodide.

CASE XVII.—Male, aged forty-one years. Fourteen months ago had a sudden paralysis of the left arm and leg without facial or speech involvement or loss of consciousness. Previous to the paralysis, for a period of about three months, had suffered from severe headaches associated with marked iusomua. The headaches had been so severe for about a month before the onset of the paralysis that he had had to remain home from business, and they came on generally in the afternoon, lasting into the evening, and disappeared immediately on the onset of the paralysis, at which time sleep also became normal. Admits having had syphilis four years ago, and describes what was probably a keratitis about two years ago, and has evidence of iritis. This patient obtained a fair amount of improvement only upon large doses of iodide.

CASE XVIII.—Male, aged thirty-six years. Was treated for syphilis twenty years ago, and has had since chronic ulceration of the throat and muscular rheumatism. Six months before coming to us he again had a chancre followed by some sort of a rash over his body and afterward sore-throat and rheumatism. Had obstinate headaches associated with insomnia, but the history does not mention the duration of either. He recovered perfectly under iodide in large doses.

CASE XIX.—Male, aged thirty-four years. Has severe headaches over the left eye that are worse during the afternoon and also occasionally in the back of the neck. Insomnia to the extent of obtaining only three to four hours' sleep each night. Headache has been constant and severe for three weeks, during all of which time there has been great insomnia. He himself recognizes the fact that he is becoming extremely irritable. When the headaches are most severe he has diplopia. Had syphilis twelve years ago, but presents no evidences and gives no history of secondary symptoms. Has three strong, healthy children. His wife has had no miscarriages. This patient made a perfect recovery upon the iodide of potash within a few weeks.

CASE XX.—Male, aged twenty-nine years. A first cousin is said to be an epileptic, otherwise there is no history of hereditary neurosis. Patient himself has been always healthy; had no convulsions in childhood. After a trauma, when eight years old, he is stated to have been unconscious for several days, but recovered perfectly, and has had no symptoms until four years ago, when he had his first fit while in bed, which, according to his statement, consisted merely of clonic spasms, without loss of consciousness. Since this period has had from one to three fits a week—not having one for three or four weeks, generally during the daytime, always with loss of consciousness and convulsive movements of the *grand mal* type. He gives a history of severe headaches and obstinate insomnia following a chancre, which he contracted five years ago. Shortly after this the patient passed into a condition of dementia, losing his way, forgetting the names of those about him, and laughing in a silly manner without cause.

CASE XXI.—Female, aged twenty-four years. Has had severe pains at vertex for several months past, with obstinate insomnia; has had a severe sore throat for some length of time, had enlarged glands, and has had alopecia. Has lost both of her children, one of hydrocephalus,

she does not know the cause of the death of the other, although she states that it had "snuffles." Has had two miscarriages. This patient made a perfect recovery in a couple of months upon the iodide of potassium in large doses.

CASE XXII.—I frankly admit that this case is not conclusive because of the fact of the cardiac lesions. At the same time I venture to put it in for the value that it may have when considered in conjunction with other cases. Female, aged forty-seven years. The 18th of last August patient had left hemiplegia with aphasia for three days, although it is impossible to obtain a clear history of the exact nature of the speech-lesion. Hemiplegia had a sudden onset, but consciousness was not lost. The hemiplegia had been preceded by headaches for several months. worse in the day than at night, and there was also considerable insomnia. The headache and the insomnia have ceased upon the supervention of the hemiplegia. Family history is negative. Patient has four living children, one of whom has epilepsy, another some form of heart disease, a third is said to be very delicate, and the fourth, the oldest, is delicate, and has some sort of attacks in which severe headache is a factor. This patient has a double murmur of the heart. The tendon reflexes and the knee-jerk are exaggerated, and some contracture of the arm and hand, with slight wasting of the muscles is present. The further history of this case is unknown.

CASE XXIII.—Male, aged thirty-nine years. Some two months before coming to the clinic was noticed doing and saying queer things, although he can give no definite account of what the queer things were. About two weeks ago the death of two brothers depressed him greatly, and about this time his memory became seriously impaired. He would sit muttering to himself, lips tremulous. About a year ago began to have very severe headaches, which increased in severity, and the insomnia at this time was very great. Would vomit in the mornings; would have attacks of dizziness on the street; appetite became very poor, and he lost flesh. About six months ago his employer dismissed him, and he was no longer able to attend to his business, which was that of a porter, apparently taking no interest whatever in his work. About this time had delusions of grandeur and of persecution. Said at first he was going to sue a firm in Germany, then that he had sued, and recovered sixty-nine million dollars; that his sister-in-law wanted to imprison him to get the money. About six months ago was committed to an asylum, where the case was diagnosticated as general paresis. Eight days after going to the asylum had an apoplectic seizure, resulting in a complete left hemiplegia. After this the headache and insomnia ceased entirely. Was in bed four months, and was unable to talk so as to be understood for three months. Gradually improved until he was able to walk slowly with the aid of crutches, still having characteristic gait. He has now to a great extent recovered; is intelligent, although his memory fails at times. Pupillary reflex normal, left knee-jerk exaggerated, slight ankle clonus, fibrillary tremor of tongue, but not of facial muscles. Food has a tendency to lodge in the left side of the mouth. Left side slightly dry. Has recovered control of the bladder and rectum, which was lost after apoplexy. The patient afterward passed away from observation; further results unknown. The patient's friend states that he had syphilis several years ago, and was treated for it by competent physicians.

CASE XXIV.—This case is of especial interest, because the history was taken many years ago by one of my assistants, long before I had thought of the diagnostic points to which I am calling attention in this paper; as will be seen, the peculiar headache and insomnia are only incidentally mentioned long after the patient had been under treatment. Male, aged thirty-seven. Gives a history of a soft chancre twelve years ago, and had syphilis when seventeen years of age. Has not been able to work for three months, and during the time has had a severe pain, particularly in the right side of the head, which is described as constant, increasing at times. There is anosmia. Paræsthesia of the lower extremities, most marked upon the left, slight tremor of the tongue, knee-jerk normal, vision normal, urine normal. There are tender points over the territory of the right side of the head. Has had what he describes as slight spasms in the left leg without loss of consciousness except in one attack. All the sensations were normal. This patient was put on iodide of potassium, 15 grains, three times a day, on August 19th. On August 27th, headache is much diminished; August 31st, still much improved; pain in the head has very nearly ceased. September 3d, has still slight pains in the head. October 12th, improvement continues, although at times there are constant headaches, lasting for a day or two. Under this date, for the *first time* it is mentioned that for three days past he has had no sleep in consequence of severe headache. October 16th it is stated that the headache is still severe and he sleeps badly. Patient then passed from under observation, and the further history is not known.

CASE XXV.—Male, aged forty-four years. Twenty-two years ago contracted syphilis whilst a sailor, and says that he has secondary eruptions, but was treated locally. He is a gateman on the elevated road, selling tickets sometimes. Finds he can give change for ten or twenty minutes correctly, when he becomes confused, and is totally unable to attend to his business. Has attacks of partial unconsciousness of short duration, and in these he sees people, knows where he is, but is unable to talk coherently, or speak a single sentence. He had three epileptic attacks of the *grand mal* type some years ago, in which he lost consciousness, bit his tongue, etc. Had local epileptic convulsions up to six years ago. This patient gives a history several years ago, the exact time not being stated, of severe headaches, with marked insomnia. He passed into a condition of dementia, but has made a fairly good recovery with large doses of iodide and mercurial inunctions, and has for several months past been attending to his business correctly.

CASE XXVI.—Female, aged twenty-seven years. There is a history of maternal migraine, but otherwise the family history is negative. Patient has been married eight years; has two children, one six and one two years old. When the youngest child was six months old, the mother began to have attacks of twitching in the left side of the face at the angle of the mouth, followed by convulsions, in which she fell to the floor, with general convulsive movements. On coming out from these she was stupid and passed into deep sleep. The attacks were always the same. She has headaches over the top and brow, at times severe, which are much worse at night, and often cause complete insomnia. Never had any headache until after the aforesaid child was born, and this child is said to have had an eruption on its lips and

under the nose, with "snuffles," whilst its eyes have been in a state of chronic inflammation, and it has vertebral caries, for which it is wearing a plaster jacket. There has been one miscarriage since, but she has also had one healthy child born. As this patient is seven months advanced in pregnancy, and has only recently come to my clinic, it is impossible to speak of the result.

CASE XXVII.—Male, aged twenty-six years. Comes to the clinic for the relief of headaches and a great sense of fatigue. His headaches are continuous and worse at night, and until recently were associated with obstinate insomnia. Has overcome the insomnia by treatment, but is dependent for sleep upon drugs. Has an interstitial keratitis that is apparently syphilitic, and admits having had syphilis three years ago, but does not know of any secondary symptoms whatever. Was under treatment for it about two months. Had trouble with his eyes exactly similar to present condition two weeks after he contracted syphilis. This patient is still under treatment, but has markedly improved in about three weeks, although it is as yet too early to positively speak of the result.

In tabulating these cases I have arranged them under the headings of pseudo general paresis, hemiplegia, basilar meningitis, mania, hallucinations, cephalalgia, intra-cranial syphilis, paralysis of the left arm and leg. This may at first sight seem to be a rather indefinite classification, but when it is borne in mind that the lesions of intra-cranial syphilis affect every portion of the brain and its meninges, and cause such varying symptoms, it will be seen that no other method of classification is feasible except that of selecting prominent symptoms. By pseudo general paresis I mean that malady to which Morel-Lavallée and Bélières have recently called attention in their most excellent and important monograph,¹ to which the name was given a number of years ago by Fournier, and which the former gentlemen have shown conclusively not always to consist of the lesions of a true general paralysis (although this may sometimes be the case), but generally to have as a pathological cause focal lesion of the cortex or subcortical substance, or syphilomata setting up cortico-meningeal adhesions and alterations. By the term basilar meningitis I have intended to designate those conditions which autopsies have again and again demonstrated to be due to a gummatous infiltration of the membranes at the base. The other terms explain themselves.

Of these 27 cases the average age was thirty-five and two-ninths years, the maximum being fifty-two years and the minimum being twenty-four years. In 13 there was complete recovery, that is in $46\frac{1}{8}$ per cent.; in 4 there was partial recovery (15 per cent.); in 5 the results of treatment were unknown, because the patient passed away from

¹ Syphilis and Paralyse Générale. Paris, 1889.

observation, and in 1 the patient is still under treatment. The males were 20 in number and the females 7.

Case.	Sex.	A e.	Type of disease.	Result of treatment.
1	Male.	39	Pseudo general paresis.	Recovery.
2	"	29	Mania.	"
3	"	35	Hemiplegia.	No improvement.
4	"	43	Pseudo general paresis.	Recovery.
5	"	31	Basilar meningitis.	"
6	Female.	40	Neoplasm Gasserian ganglion.	Partial recovery.
7	"	33	Hallucinations.	Unknown.
8	"	53	Basilar meningitis.	Recovery.
9	Male.	37	Double hemiplegia.	Partial recovery.
10	Female.	32	Hemiplegia.	Unknown.
11	Male.	52	Cephalalgia.	Recovery.
12	"	30	Intra-cranial syphilis.	"
13	"	26	Hemiplegia.	Unknown.
14	Female.	29	Intra-cranial syphilis.	Recovery.
15	Male.	28	Pseudo-general paresis.	No improvement.
16	"	40	Hemiplegia.	Partial recovery.
17	"	41	Paralysis of arm and leg.	" "
18	"	36	Cephalalgia.	Recovery.
19	"	34	Cephalalgia.	"
20	"	29	Pseudo general paresis.	No improvement.
21	Female.	24	Cephalalgia.	Recovery.
22	Male.	47	Hemiplegia.	Unknown.
23	"	39	Pseudo general paresis.	No improvement.
24	"	37	Basilar meningitis.	Unknown.
25	"	44	Pseudo general paresis.	Recovery.
26	Female.	27	Epilepsy.	Still under treatment.
27	Male.	26	Cephalalgia.	" " "

I therefore maintain that in many cases of syphilis, constituting a majority of those which have come under my observation, there have been symptoms of a cephalalgia that is quasi-periodical, occurring mostly at night, though occasionally in the afternoon or morning, with marked insomnia, and that when any paralytic or convulsory symptoms supervene, this headache and insomnia suddenly disappear. From these facts I would assert that the occurrence of cephalalgia and insomnia with these characteristics is diagnostic of intra-cranial syphilis. I would furthermore affirm that the occurrence of hemiplegia in an individual under middle age, with or without this insomnia and cephalalgia, should render us extremely suspicious of syphilitic causation. This insomnia and cephalalgia generally belong to the early stage of intra-cranial syphilis, although they are to be found in addition in the primary, secondary, or tertiary stage of the general syphilitic infection.

I have never been able to make a post-mortem examination in any case in which the cephalalgia and insomnia were the only symptoms, and I cannot, therefore, state anything positive as to the exact pathological lesions which cause these two symptoms. It is reasonable, how-

ever, I think, to assume that they are due to the well-known gummatous infiltration of the meninges, because the pathological alterations of the cerebral and cerebellar substances alone do not usually give rise to pain except when they are the site of neoplasms, and not always then, and also because this is true of the different forms of endocarditis. Another fact that is perhaps confirmatory of this theory is that I have never yet seen a case with the symptoms alone of the peculiar headaches and insomnia that did not yield promptly to vigorous anti-syphilitic treatment.

I am perfectly well aware that the pathognomonic symptom in medicine has gone out of fashion, as time has shown that every one of these so-called signs has proven to belong to more than one disease. Nevertheless, I think it is true that pathognomonic groups of symptoms have held their own in a large degree, as in typhoid, pneumonia, locomotor ataxia, general paresis, etc. I would, therefore, invite the careful attention of the profession to this group which I have just detailed, simply saying that I have never seen it in a case that was undoubtedly non-syphilitic except in one single case of acute bulbar paralysis. I cannot, therefore, resist the conviction that it is of great significance.

6 EAST FORTY-NINTH STREET, NEW YORK.

OBSERVATIONS UPON THE ANATOMY AND SURGERY OF THE URETER.

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THE observations which follow are the result of some investigations upon the anatomy of the ureter, made with reference to its surgical accessibility in different parts of its course. They were undertaken with the especial object of determining how best to reach and remove stones impacted in the ureter.

In the remarks which follow the writer takes it for granted that, if possible, it is always best to use an extra-peritoneal incision for the removal of a stone. The ureter is so thin-walled, especially when dilated by the retained pus and urine behind a stone, that if it is opened within the abdomen the closure of it by sutures must always be a doubtful and hazardous undertaking.

If animal sutures are used, the danger that they will be too soon absorbed is great, while silk sutures introduce the possibility of secondary stone-formation.

The writer has been able to find but one instance of a ureter sutured within the abdominal cavity (Cullingworth),¹ and in that case, although it was reported that there was no yielding of the wound in the ureter discoverable at the autopsy, still, as the patient died on the fourth day, it was rather too soon to say whether the sutures were going to hold or not.

The ureter, leaving the pelvis of the kidney by a funnel-shaped opening, runs downward on the anterior surface of the psoas muscle, crosses the common iliac artery and vein at the entrance of the pelvis, and then running in the recto-vesical fold of the peritoneum converges toward the opposite ureter, and enters the posterior wall of the bladder. Here in the male it crosses the vas deferens. The opening through the wall of the bladder is more or less of a valvular one, as the ureter, after penetrating the muscular coat, runs for some half to three-quarters of an inch between the muscular and mucous coats before it actually opens into the bladder. The opening into the bladder is somewhat smaller than the rest of the canal.

In the female the ureters pass around the neck of the uterus, which explains the reason that an increase in the size of the uterus causes a mechanical impediment often to the passage of the urine. As the ureters approach the pelvis in the lower part of their course through the abdomen, the left ureter lies close to the spine, and in the angle between the body of the vertebra and the psoas muscle. On the right the ureter is somewhat further separated from the spinal column by the interposition of the vena cava inferior. The vein and ureter lie in close apposition.

While this description² serves as a fairly reliable guide to the ureter in most parts of its course, still in a surgical search for the canal deep in the tissues—particularly if the subject be a fat one—it is extremely hard to find the lax tube, and to recognize it in its collapsed condition. Therefore anything which enables the surgeon to locate the ureter any more exactly may be of great aid in his search. There is a relation of the ureter to the peritoneum which I cannot find mentioned in any description of its anatomy, a knowledge of which will greatly simplify this search. This is the fact that the ureter is adherent to the peritoneum,³ and always separates with the peritoneum as it is stripped up from the parts behind. The reason of this adhesion of the ureter to the peritoneum I sought by making microscopical sections across a ureter separated with its peritoneum and hardened in alcohol. A study of these sections showed that the ureter was bound to the under surface of the peritoneum by fibrous bands, which explains this intimate connection of the ureter with the membrane over it.

¹ Trans. London Pathological Society.

² Taken from Hyrtl.

³ Twynam alludes to this adhesion of ureter to peritoneum.

Further, an examination of a number of subjects leads me to believe that the relation of the ureter to that part of the peritoneum which becomes adherent to the spine is within a slight range of variation pretty constant, the ureter lying just outside the line of adhesion. So that if the surgeon has stripped up the peritoneum, and come down to that point where it refuses to strip readily from the spinal column, he will find the ureter upon the stripped up peritoneum at a short distance outside of this point. On the left side the distance from the adherent point to the ureter is from one-half an inch to an inch, while on the right side it is somewhat greater, owing to the ureter being displaced to the outside by the interposition of the vena cava between it and the spine.

After the ureter dips down into the pelvis it is less easily located, because it does not bear any fixed relation with a bony landmark, but fortunately in the cases in which a stone is sought in it, we have a hard body that is readily palpable to guide us to it.

To reach the ureter in the upper part of its course, perhaps no better incision can be chosen than that planned by Israel.

He draws a line from a point on the anterior edge of the sacro-lumbar mass of muscles, a finger's breadth below the twelfth rib, parallel to the rib as far as its tip; then turning down toward the middle of Poupart's ligament till the line of usual incision for tying the iliac artery is reached; then again turning toward the middle line, and ending on the external border of the rectus muscle. According to the seat of the calculus, the incision will be made on the posterior, middle, or anterior third of this line.

This incision gives us access to the ureter in the abdominal part of its course, and in the upper part of the pelvis. In a very thin subject with lax abdominal walls, or in a child,¹ it might even be possible to reach it down to within an inch or two of its entrance into the bladder; but even if reached, it would be difficult to operate upon it at such a depth.

Practically, in adults the lower three or four inches of the ureter cannot be reached from in front by an extra-peritoneal incision.

Unfortunately, it is just in this lower part of the ureter that stones are likely to lodge. As the ureter is narrower just where it enters the bladder, the stone is often arrested there, and may remain fixed for a long time.

The plan suggested hitherto for the removal of stones impacted close to the entrance into the bladder has been to approach them through the bladder, by a supra-pubic incision in the male, and by dilatation of the urethra in the female.

If the stone is already projecting well into the vesical cavity, or has

¹ Twynam removed a stone from the ureter about two inches from the bladder in a child, by an incision as for tying the iliac artery.

actually passed through the muscular coat and is lying under the mucous membrane, it may be removed easily and successfully through the bladder, and this would certainly be the method of choice. When, however, the stone has not reached the bladder cavity, and an incision of the bladder-wall is therefore necessary to uncover it, this operation is a dangerous one, as urinary infiltration about the base of the bladder is likely to follow it. It would be better then to reach the stone in the vesical end of the ureter by an incision from the outside, which would open a way for the escape of any urine that was afterward extravasated.

As has been said, this part of the ureter cannot be reached from above, and it is necessary, therefore, to seek some approach to it from below. It occurred to me that a modification of the incision employed by Kraske for excision of the rectum would afford the desired access to this lower portion of the ureter, and dissections have confirmed me in this belief.

I find that an incision along the border of the sacrum, on the side upon which it is wished to reach the ureter, stopping just below the point of the coccyx, with a division of the sacro-iliac ligaments and the removal of the coccyx and the lower part of that side of the sacrum, lays open the pelvic cavity in a most satisfactory way, and gives easy access to the lower three or four inches of the ureter. The only difficulty in this dissection is in finding the ureter, which in its collapsed state cannot be easily made out.

The converging lines which the ureters pursue through the pelvis lie pretty closely over the lateral edges of the sacrum, and this relation will help somewhat in fixing their location when approaching them from behind. The peritoneum is very thin, and there is considerable danger of wounding it during a protracted search. Of course, with a stone in the ureter to guide us, this difficulty would largely disappear.

The danger of wounding the rectum may be avoided by introducing into it a large sound, with which its cavity may be mapped out, and which can be used afterward to draw it to one side.

For a stone impacted in the male this would seem a very ready and safe incision for reaching this portion of the ureter. The space afforded is ample for a careful inspection of the parts, and the opening, being dependent, affords good drainage.

In the female we have even readier access to this part of the ureter through the vagina. The ureter for the last two, or even in some cases three, inches of its course runs in the broad ligament in close relation to the upper part of the vault of the vagina, where it can be reached and incised without danger of opening the peritoneum.

That so much of the lower end of the ureter lies within the broad ligament, and is accessible from the vagina, does not seem to be generally understood.

Emmet describes a case in which the stone projected into the bladder

enough to give a click when the steel sound passed over it, and in which he cut down upon it from the vagina. He says: "As soon as I reached the stone, I enlarged the opening forward, toward the neck of the bladder, this being the only safe direction to avoid entering the peritoneal cavity.

From my dissections it would seem that, even had the stone lain an inch, or an inch and a half, higher up in the ureter, it might still have been reached from the vagina without danger of wounding the peritoneum.

The incision for reaching a stone lying above the vault of the vagina should be outward and backward, in order to keep it within the layers of the broad ligament. After the vaginal wall is divided, the finger pushes up readily into the broad ligament, and the tissues can be pressed aside until the stone is reached.

If then the incision is made through the ureter on its under side, the danger of injuring the peritoneum must be slight. In case it happened that a stone was so lodged in the ureter of a female as to be out of reach from the vagina, and yet not high enough to be accessible from above, the incision over the sacrum might be required for its removal.

That the removal of a stone above the vault of the vagina is feasible by vaginal incision, the following case will show :

The patient was a rather stout woman of thirty-nine years of age, and was seen first by me May 15, 1890. She had for fifteen or sixteen years been subject to attacks of renal colic, always on the left side, and almost always followed by the passage of stones.

The last severe attack was in December, 1888, but since that time she had had a number of slight attacks during which she had passed twenty or more small stones. The attack in which I saw her began five or six weeks before my visit, and had continued ever since, with pain of varying intensity.

The urine was at times much diminished in quantity, and for several days before I saw her had been very scanty (from four to six ounces a day). It had, during this time, been loaded with urates. On the day that I saw her it had become more abundant and less thick.

The patient had a good appearance, with moist tongue, quiet and steady pulse, and normal temperature. She was perspiring rather freely.

The pain in the region of the left kidney, and running down toward the bladder, was intermittent and spasmodic in character.

In the left lumbar region was a distinct tumor about as large as two fists, which was sensitive to pressure. There was also a point of tenderness deep in the left side of the pelvis. By vaginal examination, a little hard mass was found in the left broad ligament close to the cervix uteri. This felt about as large as the last joint of the forefinger, and it was very sensitive to pressure. The palpation of it during the examination started a spasmodic pain in the left side that had a bearing-down or expulsive character.

A sound introduced into the bladder could be carried to within about

three-quarters of an inch of this little, hard mass, but could not be brought in contact with it by the most careful bimanual manipulation.

On July 1st, I saw her again, and the calculus could be felt in exactly the same place where it had been detected by the examination in May.

On July 4th the patient was etherized for operation. An incision was made over the calculus through the vault of the vagina just to the left of the cervix uteri. The calculus was easily reached, the grating of the knife upon it being distinctly felt during the first incision.

After the end which presented had been thoroughly uncovered, it was found that the rest of the calculus was so tightly grasped by the tissues above that it could not be easily extracted. In fact, the presenting end broke to pieces under the grasp of the forceps with which extraction was being attempted. After trying many manipulations in vain, a blunt hook was passed up alongside of the calculus into the ureter behind, then turned and hooked over the upper end, and traction with this, aided with the finger pressing the tissues aside, finally accomplished the removal of the stone.

The moment it came out there was a rush of pus from above. This pus was of ordinary thickness, apparently not much thinned by urine. Probably from ten to twelve ounces escaped. A rubber tube was introduced into the ureter through the opening made. After the pus had fully escaped, the tumor in the abdomen was found to have disappeared. The patient made a good recovery, and the urine, which was very scanty just after the operation, gradually increased in quantity until it became sufficiently abundant. Drainage through the fistula was kept up for some time, and finally, when the drainage-tube was removed, there seemed to be no tendency for the opening to close, there being a constant, moderate discharge of pus through it. She recovered strength slowly, as is usual in those cases where the kidneys are seriously involved. She left the hospital on the 25th of July. She continued to gain strength after getting home, and finally was able to be about as usual, doing her ordinary work.

This patient was last heard from in November, 1890, and at that time there was still an opening in the vagina, discharging a small amount of pus. No urine ever came through the fistula, showing that the long distention of the kidney during the complete stoppage of the ureter had sufficiently destroyed the cortex to stop excretion. If at any time the escape of pus into the vagina becomes a serious annoyance, it can be stopped by the removal of what remains of the kidney.

The stone that was removed weighed one hundred and ninety grains. It was elongated, and evidently made up of two stones which had become attached together, as there were two nuclei, one at each end of it.

I have endeavored in this brief communication to point out the ways in which the ureter can be safely cut down upon in different parts of its course for the purpose of removing calculi impacted in it; and my dissections have led me to think that by a properly selected operation a stone can be removed from any part of this canal by an extra-peritoneal incision.

In order now to select the proper incision for each case, it is neces-

sary to be able to locate the stone exactly, and this is often a matter of great difficulty.

A rectal or vaginal examination will ordinarily reach a stone of any size impacted in the lower end of the ureter, but throughout the rest of its course this canal lies so deeply that palpation of it is very unsatisfactory.

Occasionally, the position of the stone may be suspected if in the presence of symptoms pointing to an obstruction of the ureter there is a constant spot of great tenderness somewhere in the course of the canal. The writer in one instance cut down over such a painful spot in the loin, and successfully removed a stone.

When indications do not, however, point with sufficient directness to one spot, more exact information must be sought, and within the past eighteen months two operators,¹ seeking a solution of this question, have made use of an opening into the abdomen, and palpation of the ureter through that opening with brilliant results.

In both of these cases the stones, though small, were readily felt through the abdominal incision; and after an opening had been made in the lumbar region, the hand in the abdomen greatly aided in the removal of the calculus—in one case by steadying it and guiding the instruments to it, and in the other case by actually lifting the calculus out of the pelvis to a point where it could be easily reached above the crest of the ilium.

This last case suggests that it might be possible by manipulations through an abdominal incision to work a calculus back along the ureter from deep in the pelvis to a point where it could be reached from the loin, and thus to avoid the necessity of the more severe sacral wound.

It may also occasionally happen that a friable calculus can be crumbled between the fingers without injury to the ureter, and thus reduced to sand, which will pass along the canal into the bladder.

Whether it would ever be wise to employ a needle to break up a calculus in the ureter, as Mr. Thornton has done with calculi in the biliary ducts, seems to me very doubtful. The urine is a thin fluid as compared with the bile, and there would, therefore, be more danger of its escaping even through the minute punctures of a needle.

Lastly, in regard to the proper treatment of the ureter after the removal of the calculus.

Mr. Arbuthnot Lane closed the wound in the ureter by a continuous silk suture, and had no leakage from it; Mr. Twynam also sutured the urethral wound, but had considerable leakage from it, and the silk gave rise to some suppuration.

¹ Hall: New York Medical Record, October 18, 1890. Arbuthnot Lane: Lancet, November 8, 1890.

In the cases reported by Dr. Ralfe and Mr. Godlee, and by the writer, in which longitudinal incisions were made into the ureter, the slight leakage of urine and the rapid healing of the wounds would seem to show that suturing the wound was an unnecessary prolonging of the operation.

Furthermore, owing to the thin wall of the ureter, it must be a matter of great difficulty to prevent the stitches from entering the calibre of the tube, and if they do so, they are likely to serve as nuclei for fresh stones.

It would seem, therefore, best not to suture the canal, but to provide adequate drainage for the urine escaping from it until the wound in its wall closes.

In the female the lowermost part of the ureter is in intimate relation with the vaginal wall, and it is possible here to get sufficient thickness for the easy application of sutures without encroaching on the cavity of the tube. Emmet thus closed the wound in his case with fortunate result.

In 1889 M. Le Dentu, in his large work,¹ wrote: "The portion of the canal between the entrance and the floor of the pelvis must, for the present, be regarded as inaccessible."²

I trust that the considerations that I have offered will show that this is no longer the case.

The following appendix gives a brief account of the important surgical features of all of the more recent cases that the author has been able to find in which calculi have been removed from the ureter. Their almost uniform success, while suggesting the possibility that the less favorable cases have not yet found their way into print, shows, at least, that much may be accomplished in this branch of surgery.

Dr. T. A. Emmet has met with three cases³ in which a stone was impacted in the lower end of the ureter. In two of these cases he operated: once by opening the bladder, and then with a curette removing the stone from the mouth of the ureter. In the other case he always felt the click of the stone on the sound in the same place. Suspecting that the stone was in the ureter, he made slight backward pressure with a large sound in the bladder, and was then able to feel it with his finger in either the vagina or rectum.

With the patient on the side he operated by an incision through the vaginal wall, while an assistant kept the parts prominent by pressing backward and upward with a sound in the bladder. The stone was

¹ Affections Chirurgicales des Reins, des Uretères, et des Capsules Surrenales.

² "La portion du conduit intermédiaire au détroit supérieur, et au plancher du bassin doit seule jusqu'à nouvel ordre être considéré comme inaccessible."

³ Principles and Practice of Gynecology, 1884, page 796.

removed without having entered the bladder or peritoneal cavity. The weight of this stone was 98 grains.

Dr. Cullingworth reported a case¹ in which there were calculi in both ureters.

The patient was a woman of thirty years. The symptoms, referring to the kidneys (attacks of pain in back and sides) dated back ten months.

When seen she had fever, pain in loins, frequent micturition. The urine contained much pus.

Examination showed a smooth, lobulated tumor in the right side of abdomen. *Per vaginam*, there was detected a mass of stony hardness, about the size of a walnut, to the right of the uterus, and a smaller and equally hard lump to the left.

The diagnosis made was pyonephrosis, with probably independent disease of the ovaries.

An abdominal incision was made, and a stone was found impacted in the right ureter, with great distention of the ureter and pelvis of the kidney above.

This was removed by an incision directly into the ureter, and much pus and urine escaped through the abdominal cavity. The stone weighed 270 grains. The edges of the incision in the ureter were brought together by means of five interrupted sutures of fine carbolized silk. Drainage of the abdomen was provided by a glass tube.

The patient lived four days, the urine varying in amount from 15½ to 24½ ounces in the twenty-four hours.

At the autopsy the abdomen contained about 5 fluidounces of thin, dirty fluid. Both kidneys were enlarged, and contained abscesses. The stitches in the ureter had not given way, and there was no evidence of leakage.

It was found that the hard mass felt to the left of the uterus was another calculus in the left ureter, which, though longer than the stone taken from the right side, did not block the passage so completely.

It seems possible from this account that, had the hard masses felt through the vagina been recognized as stones in the ureters, they might have been removed by incision through the vault of the vagina, without entering the abdominal cavity.

Dr. J. M. Richmond reports the case² of a woman of forty-two years, in whom he detected a stone in the bladder end of the ureter covered only by mucous membrane.

He dilated the urethra and dislodged it with the finger and a tenaculum.

¹ Transactions of the London Pathological Society, vol. xxxvi. p. 278.

² Transactions of the Medical Association of Missouri, St. Louis, 1888.

Dr. Ralfe and Mr. Godlee.¹ Case of a woman aged twenty-six, who was attacked with nephritic colic on both sides during the same day. The pain in the right side passed off quickly, but on the left side it persisted.

She was seen eight days later, and at that time had had suppression for fifty-three hours.

The left kidney was exposed by lumbar opening and incised, but no stone found in it. Exploration with the finger detected a stone about two inches below the kidney. The ureter was drawn up, opened longitudinally, and the stone removed.

There was an immediate relief of symptoms, and large quantities of urine passed by the wound.

During convalescence from this operation there were several slight attacks of right renal colic, so after the wound was healed, the right kidney was exposed and incised, but only a little mass of gravel was found in it, and no stone in the ureter down to the point where it crossed the iliac vessels. Subsequently there were several slight attacks of pain, and some gravel, and a small stone was passed *per urethram*. The patient made a good recovery.

Twynam.² This was the case of a boy aged eight, well grown. He suffered from pain in the bowels and hæmaturia. This was intermittent. The symptoms seemed to point to the left kidney as the seat of trouble.

Langenbuch's incision was made on the left side. Nothing was found in that kidney, but a small, hard calculus was detected in the right ureter just below the brim of the pelvis. Nothing further was done at the time, and with the exception of one long and serious convulsion, the child made a good recovery.

At the end of three weeks the stone was removed through an extra-peritoneal incision in the right hypogastrium. There was difficulty in reaching the stone, but with the aid of an assistant pressing it up, the ureter was incised over it, and it was removed.

The wound in the ureter was sutured with silk, the ends of which were brought out through a drainage-tube. The closure, however, was not complete, and the dressings were soaked with urine.

On the fifth day the urine ceased to come through the wound. The silk kept up some suppuration for a time, but after this was removed the wound quickly closed.

Cabot.³ This was a case of calculus impacted about two inches below the kidney in a man aged forty. The stone had been fixed in that posi-

¹ Transactions of Clinical Society, London, February 22, 1889.

² Ibid., 1890, xxiii.

³ Boston Medical and Surgical Journal, September 11, 1890.

tion for a week, and had caused extreme suffering, with considerable diminution in the amount of urine.

He was seen and operated upon April 22, 1890. The ureter was exposed by an incision along the edge of the quadratus lumborum muscle. A little stone was felt in it about two inches below the kidney at a point where excessive tenderness had existed during the whole of the attack. It was drawn forward into the wound, and removed by a little longitudinal incision in the ureter. No sutures were applied. There was slight leakage of urine through the wound up to the tenth day, but after that time it ceased. The tube was removed three weeks after the operation, and the patient rapidly recovered; the operation being followed by complete relief.

Hall¹ reports the case of a woman of thirty-six years who had been troubled with paroxysmal attacks of abdominal pain of obscure origin for five years. Suspecting a calculus in the kidney or ureter, Dr. Hall opened the abdomen, and found the pelvis of the kidney and upper part of the ureter dilated, with a calculus impacted below in the ureter.

The patient was turned on the side, and an opening was made into the kidney through a lumbar incision. The left hand in the abdomen assisted in directing the efforts toward the dislodgment of the stone.

Recovery was complete, the wounds being closed on the twenty-first day.

Lane² records the case of a woman twenty-three years of age, who had been troubled intermittently with attacks of pain in the abdomen since she was three years old.

Shortly before coming under observation she had had more frequent and violent attacks than ever before, coming on two or three times a week.

After each attack the urine contained an excess of pus.

The left kidney was explored by a lumbar incision, and the pelvis was found much dilated; but nothing could be found to explain this beyond a fold across the top of the ureter, which prevented the finger from entering it.

With the finger in the lumbar wound, and afterward in the rectum and vagina, the ureter was examined, except for a short distance in the middle of its course, where it could not be reached from either direction. Nothing could be felt.

The patient recovered well, but the pain, which was at first relieved, soon returned.

In July, 1890, having recruited her strength, she returned for another operation.

The abdomen was opened along the left linea semilunaris, and a stone

¹ New York Medical Record, October 18, 1890.

² London Lancet, November 8, 1890.

was easily felt in that middle part of the ureter that had not been explored in the previous operation. With the hand in the abdomen, the stone was pressed upward to the crest of the ilium, and through a small incision in the side the ureter was exposed and the stone removed.

The opening in the ureter was closed with a fine continuous silk suture, and the wound quickly closed without any urine leakage.

Cabot.¹ This case is reported in the body of the paper.

MEDICAL GYNECOLOGY.

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THE tendency of to-day is toward specialties in medicine. The specialist is too much inclined to become confined to his branch of study and to ignore the human system as a whole, unless he has been well grounded in general practice of several years' duration.

The most successful specialist is he who is a good general practitioner, from whose practice has grown his special work. The best all-around gynecologist is he who has been and is a good general practitioner. It can be safely laid down as a postulate, that the gynecologist who is incapable of weighing in the balance carefully the necessity for increasing or restraining the organic functions of secretion and excretion with their infinite permutations and combinations incident to disorder and health, is one who will do a great many things that ought not to be done, and will leave undone many things which ought to be done, for the best interests of the patient.

The design of this paper is to enumerate some of the things that can at least interest the gynecologist. How well they will be enumerated remains to be seen. The writer can say, that a careful regard for them added to gynecological treatment has made the practice of gynecology comparatively an easy matter, and that he has seen almost numberless illustrations of failures to treat patients successfully by ignoring the proper use of much needed medicines. No attempt whatever will be made to exhaust this topic. The barest epitome is all that can be expected. It is desired to deal with the symptoms and conditions continually seen in gynecological patients—symptoms and conditions which are perhaps not of gynecological origin, but which are almost inseparable from such patients. The writer is perfectly aware that it is incon-

¹ Boston Medical and Surgical Journal, December 25, 1890.

gruous to present a paper that is not devoted to the consideration of some purely gynecological topic, but he expects to be excused from stepping aside from gynecology somewhat because it is well nigh impossible to draw the therapeutic line rigidly between this specialty and general medicine in the vast majority of gynecological patients.

The writer has been in doubt as to a suitable title for this paper. By the one used is meant that part of the subject which deals with internal medicine in addition to purely gynecological work.

The most natural order of consideration of topics for medical gynecology is the topographical one, passing from above downward, which begins with the brain and spinal cord. It is perhaps proper to state that very many symptoms herein to be considered are by no means purely and exclusively gynecological; they are the symptoms found very commonly in gynecological patients, very many of them doubtless being reflexes from functional derangements arising possibly from the original gynecological malady. To illustrate, we find time and again frontal cephalalgia to be a reflex from gastric dyspepsia produced by a constipation that results from the physical quietude enforced by an acute metritis. No one will contend that the metritis produces that form of cephalalgia directly, yet without the metritis the intervening links in the pathological chain would not have existed and the headache would not have tormented the patient.

THE NERVOUS SYSTEM.—The commonest symptoms that the gynecologist meets in the nervous systems of his patients, are nervousness, headaches, and backaches. It will be seen that no mention is here made of the many and highly refined neuroses, as no attempt is made to present anything at all of an extensive treatise on the topic. The foregoing symptoms mentioned herein will comprise all that this article desires to include.

Concerning nervousness, it must be said that, if it be regarded as arising from an imperfect capillary circulation in some part of the nervous centres, notably in the spinal cord, and that it is very often associated with deficient excretion from the skin, kidneys, or bowels, and with defective cardiac action, we shall be able to treat the great majority of cases satisfactorily. A sudorific will make many nervous patients less nervous. A diuretic properly selected is often of the greatest advantage. That protean monster, constipation, can derange more lives with nervousness than any other one pathological condition that can be named. Its treatment will be considered later on. The share in producing this symptom attributable to a weak heart is much greater than is generally accorded to it. A weak heart means lessened arterial pressure, over-distended capillaries and turgid veins, a vascular condition found with astonishing frequency in the brains and cords of nervous women. Therapeutic agents will abundantly confirm this fact. Stro-

phanthus, digitalis, strychnine, and heat all tend to stimulate such hearts. No better remedy can be suggested than the protracted sponging of the spine with water as hot as can be borne, in cases of nervousness associated with insomnia. Heat thus applied reflexly empties the crowded vascular areas in the cerebral and spinal centres and increases the cardiac tonicity, for hours at a stretch. Alcohol at bedtime for a few nights can be used to great advantage because it produces an improved circulatory condition, brings needed sleep which in turn strengthens every function, and again rebuilds the strength of the heart-centre in the medulla, thus securing the removal of the cardiac debility.

Cold water, drunk in quantities in the evening, will dissolve and flush out blood impurities, which, producing cerebral irritation by their frictional contact in their passage through the capillaries, thus causing insomnia and nervousness, now find their way out of the body through the kidneys.

In considering headaches, organic cerebral or cranial perversions will not be included, functional headaches only will be taken up. Where we have one cephalalgia dependent on organic cerebral conditions we have hundreds that are functional or reflex, consequently the latter only will fall within the scope of this paper.

It is a wonderful aid to consider the region of the head that aches. Accordingly we find occipital headaches, coronal headaches, temporal headaches, frontal headaches, and general headaches. In the majority of these varieties, it will be found that cause and effect are so simply manifested that their investigation and treatment often bring the greatest satisfaction. Many patients have only one variety of cephalalgia, a few have two varieties, and occasionally a patient will be found who has three distinct and separate varieties, each one as easily recognizable as a floating kidney and a prolapsed ovary can be detected in the same patient.

Without going into tedious detail, it will be well to state, somewhat dogmatically, perhaps, the causes of the varieties of headache, knowing that each practitioner's knowledge of therapeutics will furnish the necessary remedy. The enumeration of these causes is suggestive rather than exhaustive.

With occipital headaches we may always question the heart, kidneys, and bowels. A weak heart will permit venous congestion at the base of the brain, which can produce a persistent sickening pain in that region. A patient, a victim of this form of suffering for years, aggravated at times to an extent beyond endurance so that the nearest physician was often called in to etherize her for relief, once called my attention to her blue finger-nails and blue lips when under the influence of phenacetin given for her suffering. Recognizing the presence of the well-known effect of this drug in producing cardiac depression, digitalis was pre-

scribed with the surprising effect of at once relieving her headache. Ever since then the same drug has been administered in similar attacks always with complete relief. For years she has been told that her retroverted uterus with its deep cervical laceration caused her cephalalgia. Many cases similar to hers have been treated with cardiac tonics with as marked relief.

Renal insufficiency is often accompanied by occipital suffering. This condition will be considered later on. The possibility of its presence necessitates an extended analysis of the urine. When found, it calls for a stimulating diuretic.

Bowel derangement, as costiveness, constipation, loaded colon, chronic diarrhoea, or intestinal dyspepsia, is perhaps the commonest cause of occipital headaches. When found, often dependent on a gynecological disorder, the gynecologist must treat a simple medical case with common remedies, or he will fail to relieve his patient. To suggest remedies for costiveness and constipation to practising physicians sounds very elementary, but the fact that said physicians are very often defeated in relieving this condition permanently, perhaps warrants a few words hereupon. Where a sufficiency of well-recognized rectal or anal irritation exists to produce an unusual amount of sphincteric activity, daily laxatives can be administered fruitlessly for a century. It is surprising to see how almost uniformly a failure to cure a constipation with the patient administration of daily laxatives is associated with such an irritation. It is needless to insist that its removal is a *sine qua non* to the successful treatment by remedies. Cascara sagrada administered daily for six to twelve months will relieve a large percentage of cases of constipation. It is accompanied by fewer drawbacks in its prolonged use than any other remedy that can be mentioned. Patients with plethoric habit are very satisfactorily treated with a morning dose of the salines. One of the most eligible preparations is the granular effervescent Hunyadi salt, followed by a glass of hot water, taken upon arising in the morning. The compound glycyrrhiza powder and the compound piperine pill are also excellent remedies. Massage and electricity occasionally answer but they are too often inapplicable.

One point to be borne in mind is, that the *prolonged daily use* of a laxative remedy is the *surest to bring desired results*.

The loaded colon exists much oftener than is supposed. One would naturally think that it would be found in constipated people only, and not in those who have daily bowel movements. Observation shows that it exists very often in people who have daily bowel movements, as well as in those who are constipated. A colon that contains feces in large quantities impacted in its loculi, can produce reflex symptoms in the nervous system all the way from nervous irritability up to insanity. Loculi thus embarrassed with impacted feces, for months at a time, can

take on a condition of irritability and ultimate reflex possibilities that lead to astonishing diagnosis.

A patient recently came under observation, who had been under gynecological treatment for the past five years. She passed the menopause four years before. She had been treated without relief for uterine malposition, for metritis, for ovaritis, for salpingitis, and for how many other inflammations no one knows. She suffered from more or less constant pain from her right iliac region to the right shoulder. Starting from the pelvis the pain had been regarded as surely gynecological. Examination revealed the fact that the ascending and transverse portions of the colon were greatly impacted with feces. The utmost tenderness was elicited upon bimanual palpation, so that a thorough examination was very difficult. Examination of the pelvis was entirely negative beyond an abundant leucorrhœa. The experienced gynecologist would not have made the mistake of calling this patient a gynecological patient. This case is entirely in the line of the argument in favor of medical gynecology and the thorough examination demanded to determine what is best for patients. Suffice it to say, that the unloading of the colon was immediately followed by the relief from the symptoms complained of. The patient had daily bowel movements, and always had had, and it was difficult to convince her that it was not womb trouble that she had until she saw the enormous quantities of black, ancient, and offensive feces, that she had been so carefully carrying around. The abundant leucorrhœa entirely disappeared within a month after unloading the colon. I do not know how to account for its presence, except upon the hypothesis that the uterine and vaginal mucous membranes were attempting, vicariously, to play the part of bowel in active excretory efforts. Detecting a loaded colon is a very easy matter, excepting in very obese patients. With the fingers of one hand placed in the hypochondric region, and the fingers of the other hand pressed deeply in the loins, between the floating ribs and the ilium, one can push the loaded colon forward toward the anterior abdominal wall, where it can be at once detected. Daily bowel movements in such patients can be easily accounted for by the fact that such movements pass down through the accumulation of feces impacted in the loculi. The best means to relieve a loaded bowel are colonic flushings administered with the patient in the genu-pectoral position. The patient placed thus with the shoulders much lower than the nates, can be made to receive anywhere from two to six pints of water. The water should always be as hot as can be borne. If it is used tepid or cool, it may cause the most violent tormina. Used hot it almost never produces it. After the colon has been filled the bowels should be thoroughly kneaded until, by pressure, the loculi are distended, when their contents will drop out into the volume of water. As a rule, it is safe to advise daily colonic flushings until no

more dark-colored feces come away. I have seen the worst-looking and most offensive discharges pass away on the twelfth or fifteenth day of the daily use of flushings that I have ever encountered. After yellow feces are daily produced the flushings can be given twice a week. After administering them at least a month, strychnine in some form should be given in as large doses as can be borne. The improvement of patients with colonic flushings is immediate. We do not have to wait for a month or even a week to see this improvement. Two symptoms, without abdominal examination, are always suggestive of a possible colonic impaction, and when present they always lead to examination; and they are the presence of chloasmic spots, and the voiding, habitually, of very dark or black feces. No attempt at an explanation of the reason for the appearance of chloasmic spots in such patients is made beyond the suggestion that they may arise from the efforts of the skin to excrete fecal material absorbed by the bowel from its impactions. Why patients with loaded colons should pass black or very dark feces I cannot explain. The clinical fact is all that is offered.

No reference is here made to the extremely common form of occipital headache arising from a lacerated perineum. In such lacerations the veins of the pelvis become distended because of their loss of support in the torn pelvic fascia, thus permitting enormous quantities of venous blood to accumulate in the pelvis. In this way within the pelvis is produced reflexly, through the intricate mechanism of the spinal cord and medulla, the often found occipital headache. I do not speak particularly of this form of headache, for the reason that it is a well-known gynecological symptom.

Chronic diarrhœa is best treated by antiseptic measures, the diarrhœa resulting in most cases from fermentations. Accordingly corrosive sublimate, salol, or salicin will relieve the majority of cases of chronic diarrhœa.

Intestinal indigestion must be met and relieved by remedies before gynecological patients afflicted therewith can be relieved. Fermentation is found at the basis of this disorder, and with this pathological idea in view, the anti-fermentative remedies will suggest themselves.

The next form of headaches to which attention is directed is the coronal variety. There are two kinds of this disorder; those caused by the condition of the stomach and those arising from the condition of the pelvic organs. Accordingly, when we have a distinctively coronal headache, the treatment of the stomach and the pelvis should at once be considered. It will be found that the stomach produces this form of headache a great many more times than the pelvic disorder.

The temporal headache can be produced by almost any organ upon the side of the body where the cephalalgia exists. The throat and nasal canal produce this form of headache; also, the teeth and ear, but most

frequently the eye. Outside of this we can go occasionally to the organs of the body below the head for the cause.

Frontal headaches arise from the stomach, from eye-strain, from coryza, and from gravedo. When we have determined which of these produces the headache, its cure can be easily suggested.

General headaches depend commonly upon general causes. In this way we oftentimes find rheumatic headaches, gouty headaches, neuralgic headaches, and syphilitic headaches.

The rheumatic headache is easily distinguished by exacerbation upon the falling of the barometer.

The gouty headaches are recognized by the accompaniment of uric acid in great quantities.

The neuralgic headache is indicated by the presence of hyperæsthesia.

The distinguishing characteristic of syphilitic headache is its nocturnal visitation. When we have determined the cause of the general headache, the remedies necessary to cure it will be easily forthcoming. It is well to add in passing that we will oftentimes be astonished at the improvement, under the diathetic treatment, of other symptoms complained of by the patient, which symptoms we had, perhaps, been led to believe were of gynecological origin.

The next symptom offered by the nervous system to which attention is directed is the backache. Nearly all gynecological patients complain of backache, but the merest tyro soon learns that there are backaches and backaches. A great many backaches exist which are not gynecological, and it is very desirable to distinguish them, and treat them successfully. We will be aided greatly in the study of backaches if we take them up regionally. We will thus find that we have the dorsal backache, the lumbar backache, and the sacral backache. It may be said, in a general way, that *all backaches are produced by organs anatomically, not topographically, in front of the seat of the pain*. Bearing this fact in mind enables us to unravel a backache that has resisted all former treatment.

The dorsal backache, in the great majority of cases, has the stomach or liver for its cause. The particular variety of stomach trouble most commonly found as a cause of this form of backache is the fermentative dyspepsia, which invariably produces, sooner or later, dilated stomach. The physical symptoms of dilatation of this organ are well known. In organic diseases of the stomach, as gastric ulcer or malignant disease, the symptoms need scarcely any consideration here. The form of trouble met with in the liver which produces this form of backache is congestion. With the knowledge of these two causes before us, the treatment of dorsal backache becomes, in the majority of instances, a very easy matter. On the same plane with the dorsal region are the pleura, lungs, the insertions of the diaphragm, the spleen, and the pancreas.

But it is so seldom that diseases of these organs demand our attention that they will not be considered here.

Lumbar backaches, in the majority of instances, depend upon the bowels and the kidneys. Where a protracted constipation exists, its removal will almost always cure this form of rachialgia. It is only occasionally that it is necessary to consider the kidneys as a cause of lumbar backache. Now and then we will meet with a more or less persistent pain at the juncture of the lumbar and sacral regions, which is uniformly attributable to malposition of the uterus.

The sacral backaches almost always find their cause in the pelvic organs, and for their relief we will have to consider the uterus, tubes, and ovaries. Oftentimes the rectum will have to be taken into consideration. The persistent gnawing pain at the extreme lower end of the sacrum is usually explained by disorders of the anus. No reference is here made to coccygodynia.

The backaches found in cases of neurasthenia may be considered as a disorder, to a greater or less extent, of the central nervous system. There is a form of backache that is invariably muscular, which depends upon the rheumatic or gouty poison for its cause. Its exacerbations in changes of the weather indicate its origin. Anti-lithic and anti-rheumatic remedies and plasters will relieve it.

THE RESPIRATORY SYSTEM.—The next general division of the human system is the respiratory organs. The first things that attract our attention are the nasal tract and the pharynx. I think that it may be laid down as a general fact that chronic rhinitis and chronic pharyngitis are caused reflexly by imperfect alimentary excretion. I fail yet to find a man or woman, the victim of chronic rhinitis, who has not had in the past intestinal disorder. This fact is mentioned simply for the purpose of calling attention to the possible reflex relations existing between these points. We want no better evidence of this relation than the fact that brisk purgation relieves acute attacks of congestion of the nose and throat. Consequently, it is easy for us to conclude that the patient with gynecological trouble sufficient to demand treatment ought, as a victim of chronic pharyngitis or rhinitis caused by constipation, to receive medical attention before we can hope to cure her.

Passing on further down the respiratory tract, we find that patients suffering from pulmonary troubles, in the way of repeated attacks of bronchitis, pneumonia, or pleurisy, are the subjects of diathetic tendency sufficiently strong to most urgently demand attention medically. Patients inclined to bronchitis challenge our attention to the gouty and rheumatic diathesia.

“Winter coughs,” so often seen in gynecological patients are more often relieved by lithium, potassium, and the alkaline diuretics than by

any other class of remedies. Renal insufficiency is surprisingly often connected with them.

THE CIRCULATORY SYSTEM.—Passing on to another division of the human system, we come to the circulatory apparatus. It is needless to advert to the fact that the integrity of the human heart is greatly impaired by prolonged lying in bed. The weakness of a weak heart is of the greatest possible consequence—demanding iron, digitalis, nuxvomica, and other tonics for the anæmia which we encounter, and which aggravates all the nervous symptoms. Very many times we know that patients, sick enough to receive special treatment, will have many of the alleged reflex symptoms from the pelvic organs relieved by hæmastic remedies. The condition of the cold extremities indicates a weak heart. The anæmic condition often indicates excremental poisoning. It is scarcely necessary to mention the value of iron, digitalis, strychnine, quinine, and the hypophosphites in patients with weak hearts.

THE DIGESTIVE SYSTEM.—The next division of the human body to which our attention is directed is the alimentary tract. This leads us to take into consideration gastric, intestinal, and hepatic disorders. The well-known tendency of our patients, subjected to inactivity, is to take on hepatic disorders, or perhaps disorders of the portal circulation. It is needless to mention that a certain amount of daily exercise is necessary to human beings to preserve the integrity of their digestive organs. The common links of the chain of disorders in these patients are constipation—the filling up of the portal circulation with excretive matter—and the perversion of the secretions and excretions of the intestines, which mean gastric and intestinal dyspepsia. It is a well-known fact that the liver secretes from two to five pints of bile every twenty-four hours. We all know that in a condition of health there is never passed off from the bowel any such quantity. This large quantity of hepatic secretions is reabsorbed, resecreted, and reëxcreted, passing around through the portal circulation no one knows how many times. In all cases of constipation there are absorbed certain amounts of excrement, and we thus have quantities of filth continually circulating through the liver, which must lead to functional disorder. This disorder manifests itself in the imperfect functioning of the stomach and intestines. We have thus the beginning of dyspepsia. Nature indicates to us in many cases a relief for this condition in permitting these patients to have an occasional diarrhoea. Consequently, we will find that the beginning of all treatment for the cure of the majority of alimentary disorders, in gynecological patients, should be the daily laxative.

I suppose it is a fact beyond dispute that the majority of cases of dyspepsia present the phenomenon of fermentation. Where stomachs are dilated much, indicating impaired propulsion, gas is eructated and

acidity presents itself. The best initial treatment is gastric lavation. I know of nothing so simple as the washing out of the human stomach. It is only now and then that we meet a patient who cannot tolerate it. Such a patient will permit the passage of the tube into the stomach a couple of hours after having taken a dose of bromide. I am in the habit of teaching the most delicate and sensitive patients to wash out their own stomachs. They do it very easily and simply, and all that is necessary is to have some one pour the water into the tube for them. Some patients are so terrified at the use of the stomach-tube that they threaten to never consent to its use. When they get over the dread of its use, after a few times they insist upon introducing the tube themselves. Such patients will have no difficulty in performing gastric lavation upon themselves. I have some patients who have kept up the use, once or twice a week, for months consecutively, after experiencing the limitless advantage which it procures. It is best to use the water as hot as it can be borne. At first oftentimes it will be impossible to syphon out the stomach, because of the large quantities of mucus which will block up the tube. All that can be done is to fill the stomach with hot water until vomiting occurs, or to remove the tube to provoke vomiting by titillation of the fauces. Occasionally it will be found necessary to use some prompt emetic, as a teaspoonful each of mustard and of salt in a glass of hot water. In very many cases the first washings will bring away an astonishing mass of mucus. In such instances it is best to wash out the stomach daily, until it seems comparatively free from mucus. Afterward the lavations can be used twice a week. It is best to use them in the morning when the stomach is empty. In cases of acid dyspepsia we can use the bicarbonate of soda, one drachm to the quart. In putrid dyspepsia the best remedy is the permanganate of potassium. When there are vegetable parasites phenic acid is a suitable remedy. Boric acid is an excellent disinfectant. Tincture of myrrh can be used in the atonic dyspepsia. After the daily lavation fails to bring away any evidences of stomach fermentation, it is well to keep up its use once or twice a week for several weeks, during which time the use of anti-fermentative remedies, as salol, salicylate of bismuth, corrosive sublimate, or sulphocarbolate of zinc, together with artificial digestants, as pepsine, lacto-pepsine, papoid, and *especially* ingluvin, will hold out the best promise of permanent cure.

Time will not permit me here to speak of the use of electricity applied through the gastric electrode to the stomach-wall, the application of which has the effect of contracting the stomach, just as the scrotum can be contracted, thus relieving the condition of impaired propulsion.

One of the most common of gynecological patients that we meet with, is the vast class presenting constipation, dyspepsia, and anæmia. In these patients the use of the daily laxative, with pepsin or its congeners

and the bitter tonics, will be found of the greatest possible advantage. It may be laid down as a simple clinical fact that patients who pass dark feces are patients who need daily laxatives. Patients who have now and then a diarrhoea for a day or two are always in need of a daily laxative. Patients who possess chloasmic spots are patients who are generally the victims of fecal anæmia the result of fecal impaction, and are always benefited by colonic flushings and the daily laxative. It is wise to persist in the use of daily flushings until the dark feces give way to the yellow-colored feces. It is well to bear in mind that patients taking iron or bismuth will void dark feces; but when the feces are habitually dark, it is always best to resort to the flushings and the daily laxative.

THE RENAL SYSTEM.—The next division of the human organism is the renal system. Two things in disorders of the kidneys are worthy of the attention of the gynecologist. One is the presence of a superabundance of lithic, now commonly called uric, acid. The persistent presence of too much uric acid in the system leads to grave functional disorders of the nervous system, joints, and the mucous membranes. Lithæmic patients, predisposed to gastric disorders, very easily take on gastro-duodenitis in all its phases, from simple gastric disorder to the most intractable gastric irritation, constituting the most persistent dyspepsia we have to deal with. The presence of gastro-duodenitis is most easily indicated by pressure toward the body of the vertebræ at the junction of the middle and lowest third of the space, in a straight line between the umbilicus and the ensiform cartilage. If this pressure produces pain and nausea, the presence of gastro-duodenitis is inferred. The tendency of lithæmic patients to neuralgia is well known. We find more cases of renal colic in this disorder than in any other urinary trouble. The citrate of potassium in as large doses as the stomach will bear produces very satisfactory results. Many patients can take as much as a drachm four times a day. It is best administered in some carbonated preparation, as the effervescing Vichy salts. The better, but more costly, remedy is the granular effervescing salts of lithium. It is less obnoxious to the stomach, and will dissolve a larger percentage of uric acid, than citrate of potassium. It increases the amount of urine. It does not possess the depressing effects on the heart, of the citrate of potassium. It is always advantageous to administer at the same time small doses of mercury daily for some days or weeks. The triturate tablets, containing $\frac{1}{16}$ grain of calomel, are an eligible preparation of mercury.

Another form of renal disorder, and perhaps the less appreciated in its importance, is *renal insufficiency*, about which much has been written in the past five or six years. The average human adult passes anywhere from five to eleven hundred grains of urinary solids every twenty-four

hours. Patients who pass habitually a greatly diminished quantity of urinary solids daily, say, for example, 30 to 50 per cent., are patients who are suffering from veritable uræmic poisoning. It is simply astonishing to see how common renal insufficiency is in most gynecological cases. When patients are passing only about 400 grains of urinary solids a day we will find them presenting various degrees of nervous irritability. When the amount is lessened, say to about 300 grains per day, we find this nervous irritability manifested in various urgent ways. When the solids are diminished still further, say to 200 grains per day, we find the invasion of the nervous system so grave as to demand our most solicitous attention. And with the amount still further diminished, say to 100 grains per day, we will find our patients dangerously near to the verge of uræmic convulsions or coma, the condition which we often find in the last stages of gestation.

I never consider a gynecological patient thoroughly examined unless I estimate the amount of urinary solids that she voids daily. I think the determining of the possible presence of renal insufficiency is oftentimes of more importance than that of metritis or of menstrual derangement, for the simple reason that many pelvic derangements run back in this causation, or at least in their perpetuation, to renal insufficiency.

It is a very easy matter to calculate the amount of solids passed daily. The simplest formula is to multiply the last two figures of the specific gravity of the voided urine by the number of ounces of urine passed in twenty-four hours and that product by $1\frac{1}{16}$. We can thus calculate the number of grains of urinary solids passed in twenty-four hours. Women will weigh anywhere from 90 to 180 pounds, and they will pass from 500 to 1100 grains of urinary solids per day. A woman falling below 20 per cent. of what she ought to pass of urinary solids may be said to be suffering from renal insufficiency. In gynecological work the patients suffering from renal insufficiency are wonderfully benefited by the stimulating diuretics. I have learned to connect, in many cases, amenorrhœa in girls and young women with renal insufficiency. I have seen cases in which the use of stimulating diuretics were the only remedies used to relieve this form of amenorrhœa. One patient may serve as an illustration of this class. An unmarried woman of twenty, who had menstruated five times the previous year, presented the condition of renal insufficiency, with a diminished amount of about 50 per cent. of urinary solids. She suffered also from impacted colon. Colonic flushings were repeated several times, and the stimulating diuretic in the course of thirty days increased her urinary solids to 1300 grains. She ought to have passed 900 grains normally; she was passing only 428 when I first saw her. The diuretic was continued for a period of three months. She menstruated regularly for the next nine months, when the renal insufficiency supervened again and the lapsed menstua-

tion again came on. For the last three years she has been able to watch the condition of the kidneys, and when she has increased the amount of urinary solids her menses have appeared with great regularity.

It is a well-known fact that the kidneys, ovaries, and tubes spring from the same source embryologically. It is also a well-known fact that patients who suffer from organic disease of the kidneys suffer from irregular menstruation. The article on the relation between the kidney and menstruation is yet to be written. The remedies best suited to the treatment of this disorder are few, comparatively. The foremost remedy that I know of is the old-fashioned combination of digitalis and acetate of potassium. The salts of lithia are also extremely useful.

In the foregoing examination of subjects for the consideration of gynecologists, one can but be impressed with the paucity of suggestions. I have been impelled to the consideration of this subject by the fact that so little attention is paid to the subject of general medical treatment of this class of patients. It is a lamentable fact that so many young physicians, upon graduating, are too much inclined to drift into specialties; and the gynecologist who is unable to get outside of the pelvis in the consideration of the disorders of women is greatly to be pitied.

REVIEWS.

A MANUAL OF OPERATIVE SURGERY. By FREDERICK TREVES, F.R.C.S., Surgeon to and Lecturer on Anatomy at the London Hospital. Two octavo volumes containing 1550 pages, with 422 engravings. Cloth, \$9; leather, \$11. Philadelphia: Lea Brothers & Co., 1891.

MR. TREVES has produced a book which will assuredly add to his well-established reputation, and cannot fail to be of great assistance to operating surgeons. It is written entirely from the standpoint of the operator, but little space being given to historical detail or to the varying indications in particular cases for or against operative interference. Statistical matter, which is now undergoing such rapid changes, has been largely omitted. The measures which appear to the author to be the best having been selected, such methods as are especially advocated by individual surgeons, or which have been largely or exclusively employed by them, have been described so far as possible in the language of these surgeons themselves.

The author remarks in the preface that the majority of the descriptions are founded upon personal experience in the operating-theatre and upon repeated operations upon the dead, and a careful perusal of the book shows that this statement is amply justified.

The first part, on the General Principles or Elements of Operative Surgery, is an excellent example of the evident care with which the book has been written. Attention is called at the start to the fact that no operation is without risk, and that it is the duty of the surgeon to estimate the proportion between the danger incurred by the operation, on the one hand, and by the disease if left untreated, on the other.

His remarks apply to all those operations for the removal of trifling blemishes, real or imaginary, in regard to which surgeons are so frequently consulted, especially by young women. The writer has known of one instance in which the operation for removal of a small exostosis of the lower end of the femur, after having been declined by two surgeons—the growth having produced absolutely no symptoms—was undertaken by a third with a fatal result. Mr. Treves mentions a similar case in which the operation for removal of such an exostosis led to suppuration of the knee and final ankylosis of the joint. There are also local risks in these *operations de complaisance* which are taken into consideration.

In endeavoring to estimate the risks involved by operation so far as the patient is concerned, Mr. Treves considers the following factors: 1. *Age*. 2. *Sex*. 3. *Strength*. 4. *Obesity and plethora*. 5. *Alcoholism*. 6. *Scrofula and tuberculosis*. 7. *Other constitutional conditions*. He believes that the results of all operations are more powerfully influenced by disease of the kidneys than by corresponding disease of any other organ.

The preparation of the patient is described with great care, and a chapter is devoted to what might have been called the "Preparation of the Operator." This occupies only a few pages, but is admirable in the sound common sense of its teachings, and in the terse, concise, almost epigrammatic language in which they are conveyed: "A shakiness of the hand may be some bar to an operation, but he of a shaky mind is hopeless." "In the handling of a sharp instrument in connection with the human body a confusion of the intellect is worse than chorea." Mr. Treves insists that as the full use of the larger muscles as developed by vigorous athletic exercise adds distinctly to the steadiness of the hand, "an operator should be most careful of his general muscular development."

The operating-room, the instruments, and all the details of making a wound, of the arrest of bleeding, and of closing and draining the wound, meet with the fullest attention.

The circumstances in which drainage is necessary and those in which it may be dispensed with are described in a number of concise paragraphs, as are also those relating to the local conditions which influence primary healing. The dressing which Mr. Treves prefers consists of sponges dusted with iodoform and held in place by absorbent wool and a bandage applied so as to make firm pressure upon the wound.

He also uses Tillman's dressing-linen, which he considers admirable on account of its softness, compressibility, and power of absorption, and of the quality of not sticking to the wound. He advises that, whenever possible, the wounded part should be kept in the open air. This applies particularly to operations upon the lower limbs, as he believes that the atmosphere under bed-clothes, which is hot, moist, and frequently foul, is, on antiseptic principles, the worst possible for the wound if it accidentally gains access to it. It is proper to add that the writer has seen a series of cases in Mr. Treves's wards in the London Hospital treated by his methods in which the results certainly justified his confidence in them, union by first intention being the almost invariable rule.

In the section on the Ligature of Arteries, to which about 100 pages are devoted, it is apparent in every sentence that the teaching is the result of long experience, and that the descriptions have been done at the side of the body. The surgical anatomy is, as might have been expected, exceedingly good. The diagrams are well chosen, and the descriptions are concise and clear. Particular attention has been paid to the attitude of the operator, the side of the patient's body upon which he should stand, etc., and the after-treatment is given in more detail than in most articles upon this subject. The operation for ligation of the lingual artery affords an excellent example of the care and attention to minutiae which characterize all this part of the work. We note as of peculiar value the direction to pass a small blunt hook around the digastric tendon where it is nearest to the hyoid bone and to have it drawn forward and toward the surface by an assistant. This obviously simplifies the whole operation, which is usually one of the bugbears of students in the operating-room and not infrequently of the surgeon himself. A single trial of this method is convincing of the fact that the area of operation is thus brought into better view and increased in extent, the parts well fixed, and the hyoglossus muscle easily recognized and attacked.

Ligature of the common iliac artery is recommended by the intraperitoneal method through a median abdominal incision, after the plan

which has been already employed by several operators in securing the internal iliac. The great objection that some few years ago would have been urged against the procedure—namely, the risk of acute peritonitis—may now be almost disregarded.

In the chapter on Nerves we note that in the removal of Meckel's ganglion Mr. Treves employs a chisel and mallet to cut away the anterior wall of the antrum, believing that, as compared with the trephine, the chisel is the more convenient and precise instrument and inflicts a less degree of injury upon the surrounding tissues. The operation of Mr. Rose for removal of the Gasserian ganglion is fully described, together with two cases in which that operation has been performed. As the latter of the two was not published until February, 1891, it affords evidence of the care with which the book has been brought to date.

The section on Amputations begins with a concise history of the operation of amputation, which is followed by a long account of the treatment of the stump. As the success of any amputation is to be measured, not by the rapidity or proficiency with which the operation is performed, but rather by the mortality attending the procedure and by the qualities of the resulting stump, it is evident that the importance of this subject has not been over-estimated by Mr. Treves. The future of the stump after each amputation also receives careful consideration, and the section which treats of it is among the most useful portions of the book. The subjects of the position of the scar, the securing of a good blood-supply, the providing of a reliable and permanent covering for the bone, the least sacrifice of healthy tissues, etc., are all considered preliminary to the description of special methods, as are also general points, such as handling the knife, the temporary and permanent arrest of hemorrhage, etc. The plan which has been followed by the author includes a description of all the best methods of each amputation, followed by indications for choice among them. He is opposed to transfixion at all times.

Among special amputations the section devoted to the amputation of fingers, with the surgical anatomy thereof, that of amputation of the metacarpus, and those on amputation of the toes and foot may be specially mentioned, although the descriptions are all so excellently done that there is but little room for choice. In the forearm the circular method is recommended for the lower third of the limb and that by equal antero-posterior flaps for the upper two-thirds. At the elbow-joint the operation by anterior ellipse (Farabeuf) is very properly preferred, provided, of course, that the tissues upon the flexor side of the limb are sound. In amputation of the arm the general surgical rule that the least possible amount of the limb should always be removed in all amputations is especially emphasized. Even the short stump left after the bone is sawn through at the surgical neck is better than that remaining after disarticulation at the shoulder-joint.

The osteoplastic resection of the foot is thought to be still on trial, the author believing that its supporters probably lay too much stress on the importance of preserving every possible scrap of the foot. In the lower third of the leg the large posterior flap is to be preferred, and at the middle of the leg a similar flap made by one of two different methods is recommended.

The section on Diseases of the Bones and Joints includes all the most important excisions, those involving the superior maxilla being very fully treated, while the descriptions of the various methods for removal

of naso-pharyngeal polypi are especially noticeable. A chapter on Tenotomy, which is possibly fuller, and certainly clearer, than that in any other text-book of operative surgery, concludes the first volume.

Volume II. begins with a section on Plastic Surgery, and includes various operations for hare-lip, rhinoplasty, cleft-palate, hypospadias and epispadias, etc. In hare-lip the usual operation, as performed in this country, is recommended—the paring of the edges of the cleft with a knife and the formation of an angle with its apex outward at the lower extremity of the wound being advised. The approximation, however, is effected by means of silkworm-gut sutures, hare-lip pins being objected to for fear of sloughing of the part of the wound lying beneath the figure-of-8 ligature and of permanent cicatrices from the pins.

In exstrophy of the bladder, Thiersch's method, by two lateral flaps, is the one preferred, as it is thought to be more in accord with the principles of modern plastic surgery than the method of Wood. Maury's operation, by which the flap is taken from the scrotum, is described with the remark that the tissues of the scrotum have been shown to be not well adapted for the substance of the principal or primary flap. Trendelenburg's operation of narrowing the defective area by approximating the two innominate bones by separation of the sacro-iliac synchondroses is fully described, but its value is thought to be still undetermined.

In the section on the Neck, which contains an admirable description of the dangers and difficulties of tracheotomy, thyrotomy, and laryngectomy, especial attention has been paid to the details of the operation for excision of scrofulous glands. The writings of Mr. Treves, and of his brother, Mr. William Knight Treves, of Margate, upon this subject are now well known, but we believe that this is the first time that a formal description of this operation has been included in a systematic text-book.

The section upon the Abdomen is especially full and complete, and the intestinal operations are described with the thoroughness and clearness that might be expected from one who has given the subject the study and attention which it has received from Mr. Treves. The various forms of intestinal anastomosis and intestinal suture are described with great minuteness. Among the latter the right-angle continuous suture is thought to be the best of that variety, while among the interrupted sutures Lembert's is said to have stood the test of time and to be, on the whole, the best form of suture with which we are acquainted, on account of its extreme simplicity, the rapidity with which each stitch can be inserted, and its undoubted efficacy.

In hysterectomy Mr. Treves adheres to his well-known position as to ligation of the ovarian and uterine arteries, believing that this can be done with certainty in the great majority of cases.

We observe that in describing Loreta's operation Mr. Treves suggests that in cases of recent stricture of the pylorus due to the swallowing of caustics, the operation should be postponed until the symptoms of ulceration of the stomach have passed away, and that the stomach should then be opened and a temporary gastric fistula established through which the stricture might be *gradually* dilated.

After a description of the best-known methods for the radical cure of hernia, Mr. Treves adds that it would be impossible at present to attempt to form any conclusion as to the value of one method as compared with another merely from the statistics of the various operations which have from time to time been published. It is acknowledged that the term

"radical cure" is possibly a little too ambitious, and it has had to be pointed out by every operator that the methods employed are not infallible. Still, every year that passes gives to these measures a better claim to the title with which they have been associated from their beginning.

In the article on Supra-pubic Lithotomy, Mr. Treves says that the practice observed by some of not distending the rectal bag until the bladder has been reached has much to commend it. Experiments upon the cadaver seem to show, however, that the best results are obtained, so far as the projection forward of the bladder is concerned, when the rectum is distended first and the bladder afterward.

He alludes to the objections to litholapaxy in male children, namely, the smallness of the bladder, the delicate character of the mucous membrane, the narrowness of the urethra, and the great success of lithotomy; but adds that Keegan has demonstrated their fallacy, and has made it evident that litholapaxy offers an excellent means of treating stone in children. He agrees, however, with the opinion expressed by Keegan that no one should attempt to perform litholapaxy in boys until he has first gained some experience of the operation in male adults.

Mr. Treves's method of treating prolapse of the rectum by excision; the operation which is known by his name for reaching the bodies of the lumbar vertebra; his plan of treating psoas abscess, which he irrigates, sponges out carefully, dries, and closes without drainage, are all described with great fulness; but the limits of this review forbid other than passing notice. As to operations upon the spine, he remarks that as to traumatism, the case operated on by Macewen in 1885 marks a new era, and that since then a large number of successful cases have been reported. He refers also to the high percentage of improvement which has followed operations in Pott's paralysis. In his description of the operation of resection of the spine, he states that he has followed closely the method advocated by White.

The book concludes with an excellent chapter on Removal of the Breast.

When compared with other books written on parallel lines, we think it safe to say that this is at once the most comprehensive, and, at the same time, the most clear and concise manual of operative surgery which has been written in modern times. We have compared it carefully with all the best known works of a similar character, and we have found that for precision and fulness of anatomical detail, for careful description of each successive step of the operation, for attention to all the collateral issues involved, particularly the after-treatment of the operative wound and of the patient, for judicial weighing of the advantages and disadvantages of each operative method, and for good judgment in the selection of the one finally recommended as the best, it is, in our opinion, to be preferred to any previous work on this subject.

The candor shown in this book, which is one of Mr. Treves's characteristics in all his work, is also to be noted and commended. When he has not himself done an operation he says so, and gives the grounds, whatever they may be, for the opinion which he has expressed in reference to it. In many directions, as the book shows, he has had a most extensive personal experience to draw upon, and on some subjects, as, for example, that of intestinal obstruction, his opinions may fairly be said to rank with those of the first surgical authorities in Europe. We can well believe that this work has taken, as he states in the preface, all his leisure time

for the last four years; but we can congratulate him on having produced a book which is a distinct addition to the surgical literature of our time, which will prove to be indispensable to every practical surgeon, and for which we predict a hearty and widespread approval on the part of the profession.

J. W. W.

A MANUAL OF HYPODERMATIC MEDICATION: THE TREATMENT OF DISEASE BY THE HYPODERMATIC OR SUBCUTANEOUS METHOD. By ROBERTS BARTHOLOW, A.M., M.D., LL.D., Emeritus Professor of Materia Medica, General Therapeutics, and Hygiene in the Jefferson Medical College of Philadelphia, etc. Fifth edition, revised and enlarged. Philadelphia: J. B. Lippincott Company, 1891.

THE fifth edition of this work has grown to a book of 540 pages, as many of the articles have been rewritten and new matter has been added. An interesting historical sketch of the hypodermatic method begins the work. The author uses the term hypodermatic in place of hypodermic, as the term hypodermic is not sanctioned by scholars; but the use of the less exact word is now so firmly established that it will be difficult to substitute the more proper one for it.

Under the group of remedies affecting nutrition there are given valuable suggestions in regard to the subcutaneous use of mercury, of pilocarpine, and of iron; and various methods of transfusion are briefly considered. Then follows a group which is classed as agents having the power to destroy pathogenic microorganisms, among which are found a number of antiseptics and antipyretics.

A large portion of the work is devoted to morphine, the treatment of the opium habit, and the antagonisms between atropine and other alkaloids. Following this, and also among the remedies which affect the nervous system, are strychnine, the digitalis group, cocaine, caffeine, and ergot. The subcutaneous use of quinine is, of course, taken up, and the peculiar advantage of the subcutaneous method of administering it is insisted on. Of the remaining topics, those of amylhydrate, nitroglycerin, and apomorphine are among the more important.

Besides a consideration of the subcutaneous use of the remedies, their history, properties, physiological action, and uses are given. The work has many suggestions of practical value, but things of secondary importance are also included in a work which aims to be complete.

Dr. Bartholow recommends the hypodermatic use of atropine in asthma. Morphine is treated very fully, and the author takes the ground that it is not so much used as it deserves to be in relieving pain after operations and injuries, especially during the first few hours after fractures or dislocations.

So far as the reviewer is aware, this work is the largest and most comprehensive which has been written on this subject, and the well-known and distinguished author has evidently taken great pains to include all that has a bearing upon the subject of hypodermatic medication.

F. H. W.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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THE TREATMENT OF PNEUMONIA.

In the *Edinburgh Medical Journal*, 1891, No. clxxxvii. p. 393, DR. GEORGE W. BALFOUR presents an instructive paper advocating the use of chloral combined with digitalis; the avoidance of preliminary purgation; the moderate use of digitalis to prevent cardiac collapse and as an antipyretic, with chloral to combat the insomnia, pain, and cough. The precise method is Liebreich's chloral—none other being regarded by the writer as safe—dissolved in infusion of digitalis. For an adult twenty grains of chloral dissolved in half an ounce of infusion of digitalis, in four hours ten grains in the same amount of infusion, and so continued until the temperature falls to the normal, when it is replaced by an appropriate tonic. A jacket poultice is a useful adjuvant, which may be, however, replaced by a sheet of cotton-wool. Suitable diet cannot be dispensed with. [In the *Report of St. Thomas's Hospital*, for 1889, the mortality from pneumonia was 20.5 per cent, while 53.6 per cent. of the cases ended with a crisis—40 per cent. ending thus on the fifth or seventh day. Evidently the type and severity of the disease is different in Great Britain.—ED.]

TREATMENT OF PNEUMONIA BY DIGITALIS IN LARGE DOSES.

DR. SIGMUND LOWENTHAL gives a very careful review of the literature (*Centralbl. f. Gesamnte Therapie*, 1891, Heft xi. S. 541). He uses a daily dosage of forty-five to sixty grains of selected leaves in the form of infusion until the crisis, which came on the third or fifth day after the commencement of his treatment in his twelve cases, all of which were dismissed cured. His conclusions are: Fever but slightly influenced; the pulse-rate frequently reduced, but with this reduction came often a rise in the rate of respiration

(relative dyspnoea); urinary analysis as is usual in pneumonia; expectoration frequently difficult; marked adynamia; heart weak, circulatory disturbances; in this method of using digitalis we do not obtain a specific action. The author remarks that in certain cases where from circulatory disturbances digitalis is indicated, he has had brilliant results from a single dose, size above noted.

CREASOTE.

PROF. JULIUS SOMMERBRODT, in the *Berliner klinische Wochenschrift*, 1891, No. 43, S. 1048, presents an eloquent plea for the use of this remedy for the cure of tuberculosis. In 1887 he published the results of his observations during the preceding nine years, the maximum daily dose being under eight drops. He became convinced that with this dose complete cure could be obtained in the early stage of the disease. His present paper is intended to demonstrate that this dose can be largely exceeded with safety, and that more severe cases and those of longer duration cannot only be relieved, but, indeed, cured. He considers it, in a daily dosage of one-quarter to one drachm, to be the most valuable remedy against tuberculosis. In support of his position he cites twelve cases. Quoting Nathan, Sée (with compressed air in pneumatic cabinet), Tappert [Tapret?], Grasset, and Schüller (with surgical methods) as to the value of this remedy, he advises that it be prescribed in gelatin capsules containing one and a half drops in company with cod-liver oil. He objects to its administration with balsam of Tolu, or in the form of pill, on account of its variable absorption; nor does he prescribe guaiacol, since he does not believe that this represents the entire therapeutic value of creasote. When the cost of the pills must be considered, he recommends Hopmann's mixture (one part creasote, two parts tincture of gentian) diluted with water, or in Hungarian wine. He approves of all accessory means of cure—climatic, open air, pulmonary gymnastics, nourishing diet—but he insists that the treatment must be of long duration. He finds that it does not disagree with the stomach, although at the commencement of treatment it may be necessary for a time to interrupt its administration. [The duration of the observations, the large number of patients under treatment, give this report an especial value.—ED.]

SUBCUTANEOUS OR INTRA-MUSCULAR INJECTIONS OF MEDICATED OILS.

In the *Gazette Médicale de Paris*, 1891, No. 36, p. 421, DR. A. FESTAL figures an apparatus for this purpose, and gives his method of procedure. Giving creasote the first place among the remedies for tuberculosis, he cites the difficulties arising from its administration by the mouth, and the limitations of dosage by inhalation or inunction. Although believing the method of inhalation of compressed air saturated with creasote vapor (Tapret) to be valuable, yet the expense and complexity of the apparatus will limit its usefulness. He uses pure creasote, one to fifteen in vegetable oil, washed with alcohol and sterilized by boiling, for hypodermatic injection by the method of Gimbert (de Cannes). The purpose of the apparatus (which resembles an aspirator to which is attached a funnel for introducing the medicament into the barrel, and a spring to furnish a constant motion to the piston) lies in the

necessity for very slow injection. This slowness is remarkable, forty minutes being required for the injection of five drachms of the liquid. Success is dependent upon slow injections and thorough observance of aseptic precautions. It is not painful, nor in about two hundred injections that the author has practised has he had any local accidents.

EFFECTS OF CERTAIN DRUGS ON THE VELOCITY OF THE BLOOD-CURRENT.

DR. JOHN C. HEMMETER has been conducting some experiments in the Biological Laboratory of the Johns Hopkins University (*New York Medical Record*, 1891, vol. xl. p. 292), employing Ludwig's *Stromuhr*. The drugs used were ergot, digitalis, and alcohol; the animals were dogs and cats; the artery selected was the carotid. The results were: Ergot and digitalis reduce the rate of the blood-current, while alcohol increases it. The explanations are: 1. Ergot diminishes the energy of the heart's activity and at the same time increases peripheral resistance. 2. Digitalis increases the work of the normal heart and produces contraction of the arterioles. 3. Alcohol causes dilatation of capillaries and arterioles. The therapeutic use of digitalis and ergot in hemorrhage and of alcohol as a resuscitating stimulus, then, rest on a sound foundation.

STRYCHNINE NITRATE IN TOXIC AMBLYOPIA.

DR. E. MELVILLE BLACK makes a strong argument for the use of the nitrate of strychnine in tobacco and alcoholic amblyopia (*New York Medical Journal*, 1891, vol. liv. p. 287). The nitrate is chosen for hypodermatic use because it is less irritating than the other salts. The site chosen is over the biceps muscle, and cleanliness and perfect solution of the drug (eight grains to the ounce in distilled water) are essential; the required dose may go to twenty or twenty-five minims. In dosage of over ten minims he keeps the patient under observation for a half-hour after the injection. He instances four cases in which the patient's present condition, ophthalmoscopic examination and details of treatment were carefully recorded.

DIURETIN.

DR. KRESS, in an elaborate paper in the *Münchener medicinische Wochenschrift*, 1891, No. 38, S. 663, gives a very careful review of the literature of this recent valuable addition to our therapeutic armamentarium. He cites twenty cases in which this drug has been used. His conclusions are: 1. It is a true diuretic, increasing both the solid and watery constituents of the urine. 2. It is not an irritant, and its influence upon the organs of circulation is secondary. 3. It is most valuable as a diuretic in acute and chronic diseases of heart and kidneys. 4. It can be administered to two drachms *per diem* without unpleasant results, and continued without losing its value.

MECHANICAL TREATMENT OF CATARRHAL ICTERUS AND CHOLELITHIASIS.

DR. PÜRCKHAUER, in the *Münchener medicinische Wochenschrift*, 1891, No. 35, S. 609, after mentioning the well-known mechanical methods—as faradiza-

tion of the gall-bladder, injection of a large quantity of water into the intestines, massage, digital compression of the gall-bladder—announces his own to be a thorough, regular, and persistent shaking of the body, continued over a long time, such as can be obtained by driving, riding, jumping, and dancing. He cites two instances in which a railway journey was brilliantly successful. In a case of acute catarrhal jaundice he found that a patient was relieved by jumping for the period of an hour. [We presume that a health jolting chair would meet the indications laid down by the author.—Ed.]

EXOPHTHALMIC GOITRE.

Dr. CH. ELOY, in the *Revue Générale de Clinique et de Thérapeutique*, 1891, No. 36, p. 565, gives a brief account of the most valuable methods of relief of this rebellious disease. Under the heading of external treatment he praises hydrotherapy as a means of diminishing the nervous excitability and the tachycardia. The employment of electricity is insisted upon: faradic, bilateral applications for ten minutes with the positive pole at the nape of the neck and the negative over the carotids, and for five minutes over the tumor; galvanic currents of moderate intensity with positive pole over the præcordial region and the negative at the nape of the neck. The internal treatment consists of the alternating administration of preparations of arsenic and the bromides. Arsenious acid is to be prescribed in increasing doses for a week; during the next week to be replaced by bromide of potash, in two daily doses, to be taken in an alkaline mineral water. If a mineral water is deemed necessary the ferruginous waters are preferred. The hygienic treatment consists of the absolute interdiction of tobacco, tea, coffee, and alcohol, all violent efforts, emotions, and muscular fatigue. A milk diet is insisted upon. The success in treatment presupposes a docile patient, absolute obedience to the régime, and considerable patience on the part of both patient and physician.

THE EXACT ACTION OF ALCOHOL.

Dr. E. MACDOWEL COSGRAVE, in the *Dublin Journal of Medical Science*, 1891, p. 186, has collected the opinions of various experimenters. Dr. RIDGE found that the feeling, muscular sense, and vision were diminished by moderate doses. Dr. LAUDER BRUNTON is quoted that "the influence of alcohol upon psychical processes is curious; for, while it renders them much slower, the individual under its influence believes them to be much quicker than usual." Dr. RIDGE found that germination was prevented, one-quarter of 1 per cent. being sufficient to hinder growth and oppose the production of chlorophyll. Dr. B. W. RICHARDSON reports that it stops the vital movements of the *medusæ*, probably by its action on the colloidal matter, of which its organism is composed, while various authors are quoted to show that alcohol diminishes very markedly the carbonic acid gas exhaled by the lungs.

[While the collecting of the results of these experiments is valuable, yet it is worthy of remark that many of them were conducted long before it was possible to attain the exactness which now distinguishes the work of the physiological laboratory.—Ed.]

STRONTIUM.

M. LABORDE furnishes a very interesting account of his physiological investigations of the salts of strontium in the *Les Nouveaux Remèdes*, 1891, No. 18, p. 430. Strontium and its salts are not poisonous, but even in large doses favor nutrition. Eliminated in the feces it appears to prevent fermentation and even to be a parasiticide. The lactate of strontium appears to increase the excretion of urine and at the same time to prevent its decomposition.

TREATMENT OF PULMONARY TUBERCULOSIS BY HYPODERMATIC INJECTIONS OF ARISTOL.

The report of M. NADAUD (de Larochevoucauld) is found in the *Revue de Thérapeutique*, 1891, No. 19, p. 508. The aristol is dissolved in sterilized oil of sweet almonds. The daily dose (of aristol) is one-half a grain. Twenty-one patients suffering from pulmonary tuberculosis have been treated without other medication. Seven cases have improved, so that the cure which has persisted for three or four months may be believed to be complete. The treatment lasted twenty-five to thirty days. Five cases, in which improvement had been rapid, suffered from relapses which necessitated at the end of a month a repetition of the treatment, but no case has required a third course. Three cases of excavation had not in any way improved. Two patients died, one of diphtheria and the other of tubercular peritonitis. Six cases are under treatment and apparently will be relieved. His conclusions are that aristol administered hypodermatically is not poisonous; that it is eliminated in the respiration; that it is antiseptic and modifies nutrition; that the effects are prompt, showing themselves on the sixth or seventh day by a diminution of cough and the suppression of night-sweats; that after twenty or twenty-five days of treatment the body-weight increases; that this treatment is useful in first or second stages, but with large cavities or purulent expectoration the results are slight or negative; that the injection is not painful, nor does it give rise to any inflammation of skin, abscess, or induration.

[This report, as M. HÉRARD remarked at its presentation, should be carefully considered, but an opinion as to the value of aristol should be reserved. The observations are too recent and too few in number. Several years, not months, must elapse before a just judgment can be given.—ED.]

THE TREATMENT OF PHTHISIS.

In *L'Union Médicale*, 1891, No. 105, p. 325, DR. TAPRET gives an enthusiastic account of his observations at the Hôpital Saint-Antoine on the treatment of pulmonary phthisis by medicated air. In May, 1890, he obtained a closed chamber which had been used for experiments by Bert, concerning anæsthesia under pressure, at the Hôpital Beaujon. His cases were unselected and remained in the chamber four hours each day, the air being charged with creasote vapor under pressure. Of the twenty-one patients, he discharged seven completely cured. The physical signs of pulmonary disease improved, their symptoms became less marked, and their general condition was greatly benefited. The bacilli did not, however, in all cases disappear.

No accidents occurred, nor indeed does this treatment give rise to unpleasant symptoms.

TREATMENT OF DIPHTHERIA.

M. ERNEST GAUCHER, in the same journal, No. 40, p. 693, makes a strong argument for the removal of the diphtheritic membranes by pledgets of cotton or brushes, and thorough cauterization of the surface with a solution of the following formula :

Camphor	20 parts.
Castor oil	15 "
Alcohol, 90 per cent.	10 "
Pure phenol	5 "
Tartaric acid	1 part.

This is accomplished by wetting the cotton on a carrier, and thoroughly applying to the denuded surface. The third step is complete irrigation of the throat ten minutes after the disinfection is concluded.

EUROPHEN.

The question of antiseptis in operations in the nasal cavities has not, until recent times, attracted much attention, but in the *Therapeutische Monatshefte*, 1891, Heft 9, S. 482, DR. LÖWENSTEIN presents a very valuable contribution. He finds the insufflation of powdered europfen of great value after operations in the nose, not only because of its antiseptic properties, but as well as a remedy for checking hemorrhage. In ozæna he finds it inferior to aristol, which, when used after removal of the crusts and thorough cleansing of the nasal cavities, has yielded brilliant results. In chronic atrophic rhinitis europfen has relieved the symptoms and improved the appearance of the mucous membranes. He found, however, that a ten per cent. solution in fifteen per cent. of olive oil with eighty-five per cent. of lanolin, was more rapid and beneficial in its action, owing to the fact that iodine was liberated more freely. In three cases of perforating ulcer of the septum he achieved brilliant results.

THE TREATMENT OF URÆMIC COMA AND CONVULSIONS.

DR. JOHN FERGUSON sums up a paper upon this subject in the *Therapeutic Gazette*, 1891, No. 9, p. 583, as follows :

In cases of albuminuria of moderate severity, give the saturated solution of magnesium sulphate; if more acute and urgent put the patient in bed, with the head elevated. If there be severe headache, any muscular twitchings, or tendency to coma, give calomel, croton oil, and nitrate of potassium, and maintain the action of the bowels by salts. Induce free perspiration by warm packs, hot drinks, and the salicylates. Allow no animal food but milk, and give liquids very freely. If convulsions, a hypodermatic injection of morphine, followed by pilocarpine. In pregnancy, push this treatment vigorously, thus making interference unnecessary. To secure full action of the skin, the use of salicylate of sodium or potassium is strongly advised.

MEDICINE.

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PURIFIED TUBERCULIN.

ROBERT KOCH (*Deutsche med. Wochenschrift*, No. 43, 1891) has published the results of investigations directed to the isolation of the active principle of tuberculin. After using a variety of methods he finally adopted one that yielded measurably precise and satisfactory results. One part (say 10 c.cm.) of tuberculin is stirred in a beaker while a part and a half (15 c.cm.) of absolute alcohol is added. The glass is covered and permitted to stand for twenty-four hours. At the end of this time a flocculent sediment is precipitated from the dark-brown fluid. The supernatant fluid is then carefully decanted and replaced by a corresponding quantity of 60 per cent. alcohol. The fluid is shaken and again permitted to precipitate. This procedure is repeated three or four times, until the supernatant fluid remains colorless. The fluid is then further extracted by means of absolute alcohol, the precipitate collected upon a suction-filter and dried in a vacuum exsiccator. By this means a snow-white mass is obtained, which, upon being dried at 100° C. (losing from 7 to 9 per cent. of water), appears as a light-gray powder. The product so obtained represents about half of the active principle of tuberculin. It is readily soluble in water, especially when rubbed up in a mortar. The solution, however, does not long retain its activity; it is especially susceptible to evaporation. On long standing and high heating the purified tuberculin becomes less soluble. Solutions of purified tuberculin in 50 per cent. of glycerin retain their activity for months. Such solutions withstand the influence of considerable degrees of heat. Purified tuberculin is but slightly soluble in alcohol. It responds to all the chemical reactions for albumin. From its properties it is concluded that the purified tuberculin belongs to the group of albumins. The large proportion of ash to which it gives rise, and the variability of reaction to some of the tests employed, indicate that the product is not an absolutely pure one. Although tuberculin most nearly resembles the albumoses, it differs from them, and especially from the toxalbumins, in its resistance to high temperatures; it differs from the peptones, in being precipitable by iron acetate. It seems not improbable that further investigations will demonstrate, among the products of pathogenic bacteria, the presence of other similar bodies that may prove to belong to a distinct group of albumins.

The physiological manifestations of the relatively purified product, in both guinea-pigs and man, were identical with those occasioned by the crude product.

PANCREATIC DIABETES.

As a result of an extended series of experimental investigations, DOMINICIS, of Naples (*Münchener medicin. Wochenschr.*, Nos. 42 and 43, 1891), found that total extirpation of the pancreas was always followed by irremediable disturbances that in a relatively short time inevitably proved fatal (diabetes gravis). Of all the sequelæ—polyphagia, polydipsia, polyuria, emaciation, dermatosis, alopecia, etc.—glycosuria alone was not constant; being wanting in thirteen of thirty-four animals experimented with. The more important and classical changes—in the liver (diffuse fatty degeneration and atrophy, with vacuolation), in the spinal cord (gray degeneration), in the stomach, in the kidneys, etc.—were alike present in animals that manifested glycosuria and in those that did not. If there was any difference, the changes were the greater in the latter. The injection of portal blood taken at the height of digestion from healthy animals fed upon a meat diet into animals glycosuric from extirpation of the pancreas, was not followed by a diminution in the quantity of sugar; but, on the contrary, in the course of several hours the quantity of sugar became doubled. Neither was the proportion of sugar in the urine of mellituric animals influenced by intra-venous, intra-peritoneal, or subcutaneous injections of an infusion of pancreas. A severe injury, not involving the thoracic duct or the celiac axis, was followed by a temporary suspension of the glycosuria; a similar result followed intra-venous injection of a solution of soda. The administration of iodoform or of saccharin, although it doubled or quadrupled the quantity of urine, failed to cause a reduction in the percentage of sugar. A diet almost exclusively of meat or of peptone, and a period of fasting for a week, brought about only a diminution but not a disappearance of the sugar in the urine. The livers of several animals presenting diabetes in decided degree yielded to iodine the reaction of glycogen. Slight wounds of the duodenum or pancreas occasioned transitory glycosuria.

Dominicis maintains that as in more than a third of his cases of extirpation of the pancreas, as well as in many of those of other observers, glycosuria was wanting, this symptom cannot be considered as the essential characteristic of diabetes. The validity of this position is supported by the view that in many cases the presence of sugar in the urine does not constitute diabetes, but may be a transient manifestation dependent on a variety of causes. If, then, glycosuria is not diabetes, how can it be said that diabetes is glycosuria? In exceptional cases diabetes mellitus has become transformed into diabetes insipidus.

The experiments, though not conclusive, pointed to an increased production of sugar in the organism as a cause for the glycosuria. There seemed no doubt that the increased production of sugar resulted at the expense of the tissues of the body. The hypothesis of Pettenkofer and Voit, that sugar is formed at the expense of the albumin of the protoplasm, and that of Jacoud, that diabetes is a constitutional nutritive disturbance, probably de-

pendent upon the presence of a ferment in the blood that converts into sugar the tissues of the organism that would otherwise be converted into glycogen, seem best to explain the occurrence of diabetic glycosuria.

Dominicis conceives that by eliminating the function of the pancreas changes take place in the intestinal contents that result in the liberation of a ferment that exerts a toxic influence upon the tissues, in the same way as organic poisons, such as phosphorus, etc. According to a second hypothesis, a negative intoxication may take place. Dominicis finally expresses the view that true diabetes is to be identified with neither glycosuria nor hydruria; diabetes is a grave affection, almost always dependent upon withdrawal of the function of the pancreas. For unknown reasons, absence of the pancreas is not always attended with mellituria. Progressive fatal marasmus, however, is never wanting, so that this must be considered as the characteristic symptom of destructive disease of the pancreas, and as the *sine qua non* for that constitutional nutritive disturbance known as diabetes. Transitory glycosuria may be dependent upon temporary changes in the pancreas, as well as upon influences that occasion alterations in tissue metamorphosis.

A PROPOSAL TO DISCARD THE TERM "PHTHISIS PULMONALIS."

In the course of an address on arrested pulmonary tuberculosis (*British Medical Journal*, No. 1609, 1891) DR. J. K. FOWLER, of London, gives good reasons why the term "phthisis" should be discarded. The position of those who hold that phthisis is but one disease is now a strong one, and those who maintain a contrary opinion may fairly be asked to bring forward evidence in support of their belief. All will, at any rate, admit that there are a very large number of cases of destructive disease of the lungs due to the presence of tubercle. With respect to these cases the author proposes to class them as cases of "pulmonary tuberculosis," or "tubercle of the lungs," and that for such the term "phthisis" should no longer be used. For cases of destructive disease, if such there be, where the agency of tubercle cannot be recognized, and which cannot be referred to any other well-known group, the term "phthisis pulmonalis" is perhaps the best. The following advantages are claimed for such a course: In the first place, it will bring the nomenclature of all tuberculous affections into line, and as we now speak of a tuberculous meningitis, pleurisy, or peritonitis, we shall designate the local manifestation of tuberculosis within the lungs by its proper name "pulmonary tuberculosis." This course also appears to conform to the view taken in the nomenclature of diseases of the Royal College of Physicians, in which the term phthisis, standing alone and unqualified, is no longer recognized. The medical registrar of one of the large London hospitals intends in next year's report to give a separate place to tuberculous disease, as is now given to cancer, and under the heading to place the tuberculous affections of the various organs, as directed in the official nomenclature.

The term fibroid phthisis is also no longer officially recognized, cirrhosis of the lung having been substituted. For the indurative affections of the lungs of tuberculous origin the author proposes the term "fibroid tuberculosis;" for those of non-tuberculous nature he prefers "chronic pneumonia,"

or "chronic interstitial pneumonia," to cirrhosis, as they do no violence to etymology—there is nothing "yellow" about an indurated lung.

The essentially tuberculous nature of the various destructive pulmonary lesions induced by employment in various trades, as that of knife-grinder, mason, miner, weaver, etc., are well proved. The existence of destructive disease of lung due to syphilis, does not appear to be proved.

Another advantage would be the disappearance of the term "stages of phthisis." Few expressions have done more than this to confuse the minds of students. It is hardly necessary to insist that the so-called "stages of phthisis" are stages in a pathological process which may be arrested in any one of them, and that they have no necessary connection with the general advance of the disease. The author suggests the following terms to express certain varieties of pulmonary tuberculosis which appear to call for distinctive names: 1. Pulmonary tuberculosis. 2. Miliary tuberculosis of the lungs. 3. Caseous tuberculosis of the lungs. 4. Fibroid tuberculosis of the lungs.

'ON "HEALED" OR RETROGRADE TUBERCLE.

Retrograde tubercle of the lungs occurs in two forms, one of which may be called "calcareo-caseous tubercle," and the other "fibroid and pigmented tubercle."

DR. SIDNEY MARTIN, of London, made observations on 445 consecutive cases occurring in the post-mortem room of the Middlesex Hospital, in patients dying from diseases other than tubercle. Out of this number 31 presented calcareo-caseous tubercle, mostly in the lung; and 11 cases of fibroid and pigmented tubercle, equal to 9.4 per cent.

The diseases of which the patients died may be summarized as follows:

Cancer and sarcoma	12 cases.
Lung diseases	10 "
Diseases of circulatory system	8 "
Other diseases (single instances)	12 "

Retrograde tubercle is, therefore, most frequent in cases of malignant disease and those in patients dying of lung diseases. There is no evidence that a healed tuberculous lesion may predispose to pneumonia in any other way than by the local injury inflicted on the lung tissue through the mere presence of the healed lesion.

The great difference between these two varieties of healed tubercle is this: whereas the fibroid and pigmented miliary tubercle never contains any tubercle bacilli, the calcareo-caseous tubercle almost constantly does. The bacilli are not commonly very numerous. They are of normal shape, and occur singly or in groups of five to twelve.—*British Medical Journal*, No. 1609, 1891.

PARTIAL JAUNDICE.

DR. THOMAS MACHARDY, of Huntly, N. B., records the following case:

The patient, a strong, well-nourished boy, became affected with jaundice five weeks after birth. For some days his mother observed his skin gradually assume a deep yellow color; but beyond this there were no constitutional

symptoms to indicate that the child was suffering from anything unusual. Bile was present in both stools and urine.

On examination, it was found that the upper half of the body only was involved, the discoloration descending to the umbilicus, where it ended abruptly, being sharply defined by a well-marked line encircling the body. Below this line the skin throughout remained unaffected, its pink healthy hue standing out in marked contradistinction to the intense yellow of the parts above. The discoloration was of a deep citron, and especially was this observable in the conjunctivæ and nails. By the fourth week of treatment the patient had made a complete recovery, and during all this time his general health continued excellent.—*British Medical Journal*, No. 1609, 1891.

EXPERIMENTAL INVESTIGATIONS OF THE MOVEMENTS AND OF THE CONTENTS OF THE STOMACH IN A CASE OF GASTROSTOMY.

DR. HANDFORD, of Nottingham, communicated to the Clinical Society of London the following phenomena observed in a patient who survived the operation of gastrostomy for malignant stricture of the œsophagus over five months.

A small India-rubber balloon attached to a silver female catheter was introduced into the stomach and connected by means of India-rubber tubing with a Marey's tambour and clockwork revolving drum. The respiratory and cardiac curves were well marked, and the influence upon them of different positions of the body was well shown; but no evidence whatever could be obtained of peristaltic movements of the stomach-walls, which appeared to have been quite checked by the adhesion of the stomach to the abdominal parietes. Both the diaphragm and the heart must have considerable influence in preventing stagnation of the fluid contents of the stomach. Digestion could take place efficiently in the complete absence of peristaltic movements of the stomach itself. A considerable gain in weight was not incompatible with the presence of advanced and necessarily fatal malignant disease. (The patient gained over sixteen pounds in four months whilst in hospital.) A fluid diet could be maintained for months, and in very large amount without producing "indigestion." The rapid introduction of large quantities of food into the stomach, the absence of pleasure in eating and of the perception of flavors, were not incompatible with very perfect digestion and active nutrition. It was evident that, given a suitable kind of food, fine division of it was the most important circumstance which determined rapid and easy digestion. Hydrochloric acid was absent till two hours or later after a meal. Lactic acid was present in abundance so early as half an hour after taking a full meal. Lactic acid appeared to be most abundantly and quickly produced from bread and from beef-tea; less quickly from milk. The highest total acidity was almost always after the meat-meal. The total acidity steadily increased from half an hour after a meal, when it averaged 0.84 per cent. up to three hours, when it reached 0.63, and was then chiefly due to hydrochloric acid. But at this period the absolute quantity of fluid was generally small—an important point to remember in estimating the quantity of alkali required for neutralization. The sugar all disappeared within two hours after food was taken. It was formed from beef-tea and bread, when,

so far as could be learned, no *ptyalin* or *diastase* was present. It was a question, therefore, whether starch might not be changed into dextrin and grape-sugar under the influence of microorganisms and the body temperature. —*Lancet*, No. 3557, 1891.

HEMORRHAGIC PERICARDITIS; REPEATED ASPIRATIONS; RECOVERY.

DR. T. CHURTON, of Leeds, communicates the case of a man, aged forty-six, with strong alcoholic antecedents, who came under his care with signs of right pleural effusion, dyspnoea, and pain in chest. Aspiration of twenty-nine ounces of clear fluid from pleura gave no relief (five subsequent attempts to substitute tapping of pleura for aspiration of pericardium failed to bring any improvement). The pericardium was then explored—1. In the left space just internal to mammillary line. 2. Half an inch nearer median line. 3. In right fifth space one inch from the edge of the sternum. Deeply blood-stained fluid was found at each point. Eight ounces were aspirated in left fifth space with marked relief. The fluid did not clot, and deposited a layer of blood-cells of one-twelfth inch. A few days later there was marked "respiratory pulse." Two drachms only were withdrawn from the fourth space. The author, like many others, had frequently observed in the post-mortem room that fluid in large quantity, and free in the pericardial cavity, was collected in three chief pools, one in each of the lower angles of the sac, the third at its upper part, and as measurements showed these lateral pools to lie at two and a half inches from the surface, an aspirating needle was passed in for two inches in the left space in the nipple line, and twenty-two ounces of similar fluid withdrawn. The relief, though great, was of short duration, and aspiration was again performed.

Fluid was removed from the pericardium on thirteen separate occasions. The patient was in bed six months, in hospital eight months, and subsequently six weeks at a convalescent institution. The temperature was usually subnormal. The greatest possible difficulty was experienced in getting the man to take food—his diet, previous to admission, having consisted in greater part of alcohol and beer. He undoubtedly became worse and more prostrate after the aspirations were begun, and this was apparently because he could take no food to replace the loss to the blood by reaccumulation in the sacs and to repair the abnormal tissues.

The effects of alcohol were closely watched. It was found indispensable. He was often reported to be dying, and two or three times even dead, but brandy or whiskey freely given, and soon followed by aspiration, always restored him. Peritonitis with friction sound, and pain, occurred on August 11th, over the enlarged liver. Leeches relieved the pain and tenderness; the liver was large in December. The pulse and respiration did not always vary in rapidity together. Phlebitis appeared in the right popliteal vein on August 18th, and in the left on August 26th. The œdema of chest-wall had disappeared on September 4th. Purulent urethritis was observed on September 20th; it readily yielded to zinc injections. Except at this time the urine was not, as a rule, albuminous. There was no marked perspiration. The author thought it would be well in any similar case to begin dry cupping at a much earlier date, and to secure the patient's appetite before commencing

aspiration. So much difficulty in this part of the treatment was not anticipated.

In a postscript to the original paper it was stated that on returning to work (without leave) and to his former habits as to diet, the patient became ill; after a month was readmitted with a small pleural, but no pericardial, effusion, and died suddenly on the second day. At the autopsy the heart was found universally adherent to the pericardium; the pericardium was adherent slightly to the left lung, firmly to the right lung. The base of the right lung was firmly adherent to the diaphragm, which in turn was firmly adherent to the liver. It was merely a nutmeg liver, there was no cirrhosis. The arteries showed scarcely any atheroma. The kidneys were rather hard, but apparently sound, resembling organs from a case of initial disease. The valves of the heart were normal.—*Medical Press*, No. 2741.

SURGERY.

UNDER THE CHARGE OF

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RESECTION OF THE GUT.

Four cases of resection of the gut are contributed by BARRACZ (*Archiv für klin. Chir.*, Band xlii., Heft. 3). Three of these cases were on account of gangrene following strangulated hernia; they all recovered. The fourth operation was necessitated by a sarcoma in the region of the ileo-cæcal valve, complicated by invagination. The patient died twelve hours later.

To these cases is appended a statistical study of primary resection as required by gangrene of the gut. The general mortality of all these cases varies between forty and fifty-six per cent., yet, as the author points out, these tables are of little value in determining the real death-rate, as the great majority of cases are not reported. The statistics of resection of the large intestine for the cure of new growths give about the same mortality. The author, from his personal experience and from a statistical study of the subject, draws the following conclusions: 1. In cases of gangrene of the gut, primary resection is indicated only when strangulation is not of long standing, when collapse is not present, when there are no signs of peritonitis, when the hernial sac is not gangrenous, or is not violently inflamed. 2. Where such counter-indications are present the operation should be limited to the forming of an artificial anus. 3. In case of artificial anus, resection of the gut is

indicated when the opening cannot be closed by repeated use of the Dupuytren forceps, or by plastic operations. Operation is further required in cases of prolapse or of stricture of the gut. The patient should be carefully prepared for operation by a nourishing diet. Resection of the gut and enterorrhaphy is contra-indicated in cases of preternatural anus when there are strong adhesions, such as result from localized peritonitis. The breaking up of these adhesions may either cause peritonitis from tearing of the gut and an extravasation into the peritoneal cavity, or may occasion shock. In such cases a lateral anastomosis between the loops of gut above and below the position of the natural opening is indicated.

Senn's method is to be preferred in this case. In cases of tumor of the large intestine, resection of the gut with either enterorrhaphy or anastomosis is only exceptionally indicated, namely, in small and movable tumors, and when the strength of the patient is well preserved. In well-developed tumors, and where cachexia is marked, resection of the gut and the formation of a preternatural anus or enterostomy is indicated. In case of new growth of the cæcum or the ileo-cæcal valve, resection of the diseased area, with the formation of an artificial anus, or of lateral anastomosis, are indicated. The lumbar incision, namely, that adopted in retro-peritoneal nephrectomy, is well adapted to cæcal tumors, especially in cases where the differential diagnosis between involvement of the cæcum and kidneys is not exactly made out. The technique of enterorrhaphy as practised on the Continent is a surgical procedure requiring far too much time. The quicker method, recommended by Senn—that is, lateral apposition by means of decalcified bone plates—on account of the ease and rapidity with which the operation is completed, would seem to be preferable to enterorrhaphy.

ANEURISM OF THE INNOMINATE AND PRIMITIVE CAROTID ARTERIES.

LE DENTU (*La Méd. Md.*, No. 42) reports a case of aneurism of the innominate artery involving the lower portion of the primitive carotid, which was treated by a simultaneous ligature of the carotid artery and the right subclavian. The patient died forty-four days after operation. The immediate results of surgical interference were fairly satisfactory. No complication resulted, and the pulsation of the aneurismal sac seemed to be diminished, but the heart again became very much more rapid. Two weeks after the operation the rapidity of the pulse again became reduced to normal. The patient suffered for a while from delirium and great restlessness. These symptoms yielded to sulphonal. The improvement was only temporary, the aneurism then steadily became larger, and the patient finally died from gradual asphyxia.

The author enters into a statistical study of the treatment of innominate aneurism. Walther's cases are cited. This author found that treatment of innominate aneurism by ligature of the subclavian alone, gave in three cases satisfactory results for a time, but no definite cures. Of twenty-five cases of ligature of the carotid alone, those in whom the dilatation also affected the aorta died shortly after operation. Of thirteen cases where the aneurism was limited to the innominate, nine died; in only two was slight amelioration observed. Those cases in which both branches of the innominate were

tied, gave four deaths and two cures, the latter being reported twenty months and nine years respectively after the operation. Of the twenty-five cases, therefore, twenty-one died. Of eight cases in which the carotid was first tied and a ligature was subsequently placed around the subclavian, five died and three were cured. Of thirty-five cases in which there was simultaneous ligation of the primitive carotid and subclavian, there were fourteen cases in which the results were satisfactory; twelve of these cases have been published since 1882, of these ten were cured and only two died.

Winslow has collected fifty-nine cases of ligation of the common carotid and subclavian with forty-three cures, in so far as the operation was concerned. Sixteen of these cases were completely cured. Of the remaining cases twenty were decidedly benefited.

Le Dentu makes an interesting comparison between the results of ligation in the pre-antiseptic times and those observed when the operations were conducted according to modern methods. Pre-antiseptic cases gave a mortality of 66 per cent., those treated antiseptically gave a mortality of 22.64 per cent. The thirteen cases of aneurism of the aorta treated by ligation of the carotid and subclavian are added to the statistics collected by various authors. Four of these died between the fifth and twenty-first day after operation. Four others lived for a period varying between one to four years; five have been recorded as completely cured. As a result of statistical study, Le Dentu concludes that, as a general rule of procedure, aneurism of the innominate artery should be treated by simultaneous ligation of its two main branches.

TREPHINING FOR FRACTURE OF THE VERTEBRAL COLUMN.

To the rapidly growing literature concerning surgical intervention for the relief of paraplegia dependent upon traumatism of the vertebral column, WEISS (*La Mercredi Médicale*, No. 38, 1891) contributes a successful case of trephining. The patient fell from a height of about thirteen feet, alighting upon his buttocks. On examination shortly after the injury, there was a marked backward projection of the spinous process of the eleventh dorsal vertebra. There was complete paralysis, motor paralysis of the left leg, and partial paralysis of the right leg. There was no alteration in either sensibility or reflexes. Both the bladder and the rectum were paralyzed. The first treatment consisted in the application of an immobilizing apparatus. Paralysis of the bladder persisting, catheterism was resorted to, and this resulted in cystitis. A huge bedsore formed over the scrotum. About two months after the injury the patient seemed to be steadily sinking, and operation was determined upon. The spinal cord was exposed and was found somewhat thinner than normal at a point corresponding to the backward projection of the vertebra. No sign of either curvature or displacement was detected on operation. The dura mater was opened, the wound was drained and united, an antiseptic dressing was applied, and a plaster-jacket was put on. The improvement in the patient's condition was marked and progressive. Nineteen days after operation, movement returned to the limbs, the patient had regained partial control over his bladder, and the bedsore was practically healed. Three and a half months after operation the patient could walk readily, and ultimately

completely regained his health. It is evident in this case that there was not complete disruption of the spinal cord, since sensibility was retained.

CHOLECYSTECTOMY.

An interesting *résumé* of the indications for the performance of cholecystectomy, and the technique of the operation, is given by GUILLEMAIN (*Gaz. Heb. de Méd. et de Chir.*, No. 39, 1891). The indications for this operation are usually considered to be covered by the following conditions: traumatic or spontaneous perforation of the gall-bladder, tumors, rebellious hepatic colic, or persistent biliary fistula, the operation being contra-indicated only by very extensive adhesions or by occlusion of the common duct. Removal of the gall-bladder under all these circumstances is perhaps too radical, since cholecystotomy, with or without the formation of a fistula, or cholecyst-enterostomy, may sometimes take the place of the more radical operation.

In performing the operation median incision should be made, since this allows of more thorough exploration, and, moreover, renders the cystic duct more accessible. The incision should be made of sufficient length to give the operator sufficient room to manipulate below the umbilicus, if necessary. As soon as the abdominal cavity is opened, the omentum and intestines should be carefully protected by sterilized compresses or sponges, whilst the surgeon exposes the anterior portion of the gall-bladder. Frequently it is necessary to puncture this and discharge its contents, to lessen the danger of infecting the general peritoneal cavity. When this has been done, the gall-bladder is incised and the finger is introduced for the purpose of exploring its cavity and removing calculi. This latter object is thoroughly accomplished by means of forceps and curette. If the gall-bladder is fully freed, the biliary ducts should be carefully explored by palpation and by means of catheters. A calculus lodged in the ducts can usually be readily felt by passing the finger along the course of the latter. If the surgeon fails to pass the catheter this does not necessarily denote that the duct is occluded, since the passage may be either very small or temporarily closed from external pressure. The gall-bladder usually contracts firm adhesions with the neighboring organs, and separation of these organs constitutes one of the most difficult steps of the operation. This should be accomplished by blunt dissection as far as possible, all bleeding portions being secured immediately by means of the hæmostatic forceps. When the inflammatory adhesions have been entirely separated the gall-bladder must be loosened from its normal attachments to the lower surface of the liver. This also should be accomplished by blunt dissection. Often the gall-bladder is surrounded, particularly where it is in contact with the liver, by a fatty degeneration forming an investment from which it can be enucleated, leaving this fibro-fatty capsule as a barrier between the seat of operation and the general peritoneal cavity and allowing free drainage in the latter.

When the gall-bladder is fully freed, isolation and ligature of the cystic canal constitutes the next step in the operation. This is exceedingly difficult. The ligatures should be applied as deep as possible without including the right branch of the hepatic artery or the common duct. The ligature should be of

silk, and the portion left after division should be very carefully disinfected either by solution of bichloride, 1:1000, or by means of the thermo-cautery. So far as it is possible, there should be an effort made to form a cavity separated from the general intra-peritoneal space in which the drainage-tube is placed. This may be accomplished by suturing to the parietal perineum the right border of the great omentum and utilizing in a similar way, when these structures exist, the ligamentous connection between the liver and colon, so as to form between these a furrow in the deep part of which lies the divided duct, and in which the bile will be poured out in case the ligature slips. The seventh day the drainage-tube is removed. The complications of this operation are hemorrhage, peritonitis, and septicæmia, usually due to some fault on the part of the operator, and effusion of bile into the peritoneal cavity. The last complication is most to be feared, and takes place when there is occlusion of the common duct. Of 78 cases collected by Calot, 64 were cured, and 14 died; this gives a mortality of about 18 per cent. The majority of cases, however, perished from causes not directly due to the operation, hence the true mortality, as far as the surgical procedure is concerned, is 8.9 per cent.

According to Langenbuch, after cholecystectomy the pains of cholelithiasis completely disappear, digestion becomes normal, and there is a great improvement in general health. The conditions particularly favoring a successful result of this operation would seem to be a permeable condition of the common duct, and the permanent obliteration of the cystic duct when found in combination with adhesions which are neither very extensive nor very firm.

OTOLOGY

UNDER THE CHARGE OF

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INDICATIONS FOR EXCISION OF THE HAMMER AND ANVIL.

DR. STACKE, of Erfurt, after presenting an excellent account of the origin of this important operation, and the results in the practice of numerous aurists, gives his own experience and an account of a modification of the operation (*Archiv für Ohrenheilk.*, Bd. xxxi., p. 201). Finally, the indications for the operation are presented.

The modification of Stacke consists first in loosening the auricle, as practised by Schwarze for the removal of impacted foreign bodies in the ear. A curved incision is made close to the insertion of the auricle, passing down to

the bone. This incision extends from the temporal region, above the articulation of the jaw, backward to the point of the mastoid. After ligation of several vessels, the periosteum throughout the incision is carefully pushed toward the auditory canal. By this means the bony edge of the external auditory meatus is exposed for three-quarters of its extent, and at the same time the cutaneous lining of the auditory canal is seen, projecting like a funnel from the bony canal. This cutaneous funnel is loosened from its attachment with a blunt scraper. Care must be taken not to loosen this cutaneous canal too far inward, as the thin lining of the inner canal may tear. This cylinder is now cut through near the drum-head, excepting on the anterior wall. By this means as much as possible of the lining of the auditory canal is left in conjunction with the auricle, and the periosteum is protected as much as possible. If now the auricle be drawn forward, the two edges of the cut in the posterior wall of the cutaneous canal gape apart, and the lumen of the canal and the anterior wall become visible. Now the anterior wall is cut loose from its attachment, and the entire outer end of the cutaneous canal can be lifted from its bony case. The entire bony auditory canal is now exposed to the surgeon's view. The membrana tympani can be inspected by direct light and without the intervention of the length of the cartilaginous canal. Stacke now removes the hammer and membrana tympani, or their remnants, chisels away the osseous lamella above the membrana flaccida and the osseous part of the external wall of the drum-cavity, thus laying bare the attic, or the malleo-incudo-squamous space. The bony frame of the membrana tympani behind and above is also chiselled away until there is no obstacle detected by the probe between the drum-cavity and the auditory canal, and the incus is removed. The tegmen tympani is then inspected. The stapes is protected by a metal shield arranged for the purpose. If caries is detected it is energetically but carefully scooped out with a sharp spoon. The auricle and the part of the auditory canal in connection with it are now replaced, a drainage-tube is placed in the auditory canal as far as the drum-cavity, and the entire incision is sutured; syringings are entirely avoided. The wound heals *per primam* in from three to five days. If suppuration exists in the mastoid process it is possible to detect this easily by laying open the aditus ad antrum, and the use of the probe. If cholesteatomatous masses project from this region a diagnosis of mastoid disease may be made. In such a case the incision in the skin may be carried backward and the antrum laid open at the usual spot, and the entire posterior wall of the auditory canal removed as far as the aditus ad antrum and the drum-cavity.⁵ The shield in the aditus protects the facial canal and the semicircular canal. The large cavity is to be packed with iodoform gauze, without syringing. The following advantages are claimed for this method:

1. The operation is done with direct light, without speculum, and unhindered by the curves of the canal.
2. Bleeding interferes very little with the operation, on account of the comparatively wide field of vision.
3. All diseased tissue can be surely removed, which amply repays for the trouble of the preliminary operation.
4. It is impossible to fail in the extraction of the malleus, or for the broken

head of the hammer to remain behind, or for the incus not to be found. The operation is possible in the narrowest canal.

5. The operation is unattended by injury to other parts.

6. If during the operation an indication is seen for opening the mastoid (often found only after waiting for weeks), it can be performed during the same narcosis and from the same incision in the skin.

The indications for the excision of the membrana tympani with the malleus, and in some cases the incus, are, according to Stacke—

1. As a means of improving the hearing.

(a) In fixation of the malleus due to the results of previous suppuration or adhesive inflammations, even when the stapes is known beforehand not to be normally movable, as in entire calcification of the membrana tympani, isolated hammer-anvil ankylosis, and adhesion of the membrana tympani to the promontory; and

(b) In incurable occlusion of the Eustachian tube.

It is contra-indicated in sclerosis.

2. As a means of curing chronic suppuration of the attic, regardless of the condition of the hearing.

(a) In demonstrable caries of the malleus or incus.

(b) When the malleus and incus are normal, but when the attic is carious.

(c) In cholesteatoma of the tympanic cavity.

[It must not be forgotten that a large crescentic incision behind the auricle as is demanded by Stacke, would be followed by considerable drooping of the auricle after healing had taken place.—REV.]

OPHTHALMOLOGY.

UNDER THE CHARGE OF

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UVEAL IRITIS.

DR. GRANDOLEMENT, under the caption "Uveite Irienne," urges (*Recueil d'Ophthalmologie*, Ann. xiii. No. 5) the recognition of this especial form of inflammation of the iris as distinct from inflammations which affect the anterior portion or true iris stroma, comparing its relation to the latter with that of pleurisy to pneumonia. Cases of inflammation of the uvea of the iris do not present the violent symptoms of iritis, such as increased lachrymation photophobia, the pericorneal zone of hyperæmia, discoloration of the iris, or obstruction of the pupil. They occur insidiously, with a little impairment

of vision, points of obscuration, or *muscæ volitantes*, without noticeable redness or pain of the eye, the patient, perhaps with difficulty, remembering that there had been a little redness or pain for two or three days. After some weeks the symptoms disappear, to reappear months later in the same or in the other eye. This occurs repeatedly, until the physician when consulted is surprised to discover the evidences of numerous synechiæ without any history of iritis. There may also be loss of transparency in the vitreous, sometimes even shreds of opacity and consequent indistinctness of the fundus.

This affection differs also from true iritis as to its causes; syphilis, rheumatism, etc., are commonly absent. It especially affects women between the ages of thirty and fifty, of regular lives, mothers of families, but compelled by poverty to hard daily labor. The treatment for true iritis is also quite ineffective, mydriatics, mercury, salicylates, etc., being powerless to loosen adhesions already existing, or to prevent the formation of new ones. The remedies recommended are the excision of the adhesions by a large iridectomy, or the detaching of the adhesions by one of the operations for that purpose. The iridectomy has given the most satisfactory results.

THE CORRECTING GLASSES IN APHAKIA.

DR. F. DIMMER, after a full discussion (*Klinische Monatsbl. für Augenheilk.*, Jahrg. xxix. p. 111) of the optical factors involved, concludes that when the refraction has been tested in aphakia with the ordinary biconvex lenses, if the lens that appears to give the best vision be ordered in the usual manner, and supplied by the optician in connection with the cylindrical lens required in the ordinary way with the spherical curve all on one surface of the lens, the lens so furnished will be too strong. In ordering after such a test it is necessary to reduce the strength of the spherical quite notably to obtain the desired combination. To avoid this, the plano-convex spherical lenses should be used in the testing, and the spherical curve turned from the eye as it will be in the finished glass. The cylindrical lenses commonly furnished in the trial sets are already made plano, and they should be used with the curved surface in the same position as will be occupied by the cylindrical surface of the combination to be ordered.

CONGENITAL PTOSIS AND ASSOCIATED MOVEMENT OF THE PARALYZED LID.

DR. THEODOR PROSKAUER reports, in the *Centralbl. für prakt. Augenheilk.*, Jahrg. xv. p. 97, one of these interesting cases. The patient applied on account of recent rheumatic paralysis of the right facial nerve, and presented also congenital ptosis on the left side with paresis of the left superior rectus muscle; the eyeball could be turned but little upward. Ordinarily the opening between the left upper and lower lids was but two or three millimetres, but by an effort and with the aid of the muscles of the brow this could be increased to six millimetres. As soon, however, as the mouth was opened the lid was raised without any aid from the accessory elevators, and without any spasmodic action. The maximum separation of the lids was ten millimetres, exposing the whole upper portion of the cornea. But this was not

long maintained, the lid drooping before the mouth was closed. The pupils were equal, and the ophthalmoscope showed a small choroidal crescent; fundus otherwise normal; hyperopic astigmatism. Vision only one-fourth.

CRUDE PETROLEUM IN THE TREATMENT OF CONJUNCTIVITIS.

DR. A. TROUSSEAU (*Recueil d'Ophthalmologie*, Ann. xiii. No. 5) finds among many substances experimented with, with the idea of finding a substitute for silver nitrate and copper sulphate in the treatment of conjunctivitis, the crude petroleum of the Caucasus alone worthy of especial mention. It is not irritant, is tolerated by the ulcerated cornea without pain, and provokes no complaint or resistance to its application on the part of the patient. Its therapeutic action is superior to that of its derivatives. It was tried in catarrhal, muco-purulent, follicular, granular, vernal, and phlyctenular conjunctivitis, and the conclusions reached from this clinical experience and certain laboratory tests of its antiseptic properties are: It is an antiseptic agent favorably influencing conjunctival affections, always well borne, never causing a painful reaction, and is easily applied. It is indicated for children and others that dread the more painful local applications, and is capable of affecting a cure alone in some cases, and in others of hastening or completing a cure when preceded or followed by other remedies, or associated with other recognized antiseptics.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

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ENVELOPMENT OF THE UVULA IN THE PALATINE FOLDS.

In the *Revue de Laryngologie*, No. 20, 1891, the compiler reports an instance of total envelopment of the uvula in a membrane extending from one tonsil to the other, and in continuity with the anterior palatine folds. The gentleman in whom this occurred had always suffered with an irritable throat, which annoyed him most whenever he was under the hands of the barber. The uvula was quite large and was readily disengaged by bilateral excision of V-shaped sections of the membrane with serrated scissors. The topical irritation and the cough were permanently relieved.

By one of those curious laws of similars, so often noted in all vocations, a second instance of the same kind was brought to the compiler's notice before the publication of the record noted above. This was in a female, now studying medicine in Philadelphia. These two are the only instances that have been recognized in a long practice largely confined to lesions of the throat.

TUBERCULOUS UVULITIS.

DR. RAGONEAU reports (*Revue de Laryngologie*, No. 20, 1891) an instance of bilobar hypertrophy of the uvula, with a tubercle in the centre of each lobe surrounded with miliary granulations. Dysphagia was extreme. The lesion appeared some time after the cure of a tuberculosis of the larynx, which had occurred in the fourth year of a pulmonary tuberculosis.

A CASE OF PUSTULES OF THE THROAT, PHARYNX, NOSE, AND LARYNX.

DR. AUDUBERT, of Luchon, reports (*Rev. de Lar., etc.*, No. 8, 1891) the case of a cachetic woman, fifty-two years of age, much depressed in health in consequence of a protracted series of misfortunes, who was under observation in Moure's clinic for several months with successive pustular eruptions in the sublingual mucous membrane, both sides of the septum narium, the anterior palatine fold, the vocal band and the adjacent internal face of the arytenoid, and in the vault of the palate. The stage of ulceration only was noted in these regions, except when the arch of the palate was involved, at which time a veritable phlyctena was seen, which, when pierced, gave exit to a small quantity of pus, and subsequently when a vesicle was seen on the palate. During the process isolated echthyma was manifested on the dorsal face of one of the thumbs, and isolated pustules appeared on one of the nipples, and on the anterior region of the neck. Treatment seemed to be of little avail, but cicatrization slowly ensued. There was no fever, but little topical pain, simply a sensation of discomfort and dryness of the throat, and not even any alteration in the voice when the larynx was invaded. It seems to the recorder that the case indicates an infectious process manifested by pustules in the skin and mucous membrane of short duration, and presents a confirmation of the opinion advanced by some observers that cutaneous affections may present upon the mucous membrane with their ordinary symptoms.

RETROPHARYNGEAL ABSCESS.

Two instances in adult males, in which the trachea had become pushed to one side, are reported by GEORGE FOY (*The Medical Press*, No. 2736, 1891). Both occurred in subjects living under wretched hygienic condition. In one the disease was attributed to abscess at the root of a carious tooth in the lower jaw. Both were relieved by external incision, which gave issue to pus in large quantities. References to similar cases are given.

DISEASE OF THE MEDIAN RECESS OF THE PHARYNX.

In an excellent article (*Wiener klin. Woch.*, No. 40, 1891) on the diseases of the so-called *bursa pharyngea*, PROF. O. CHIARI reviews the cases published by Tornwaldt and many others, and he records eight of his own, all he has seen in some 3000 patients with disease of the throat or nose. His conclusions from this study do not lead him to regard, as others have done, *pharyngitis sicca* as a result of disease of the structures under consideration; nor to find that the associated diseases of the nose and pharynx, so usually,

present, are influenced by special treatment of the structure even when disease there has been successfully combated.

CYSTS OF THE VAULT OF THE PHARYNX.

DR. V. RAULIN, of Marseilles, reports (*Revue de Laryngologie*, No. 17, 1891) two cases, giving synopses of the literature on such cysts, and presents a systematic study of the entire subject.

DERMATOLOGY.

UNDER THE CHARGE OF

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ANATOMY OF CHEIRO-POMPHOLYX.

A. WINKELRIED WILLIAMS (*British Journal of Dermatology*, October, 1891) succinctly describes the clinical features of this much-discussed disease, as exemplified in the case under consideration. 1. Depression of the nervous system. 2. Vesicular eruption confined to the sides of the fingers and thumbs, which comes out suddenly accompanied by slight itching, consisting of minute vesicles imbedded in the epidermis, which resemble sago grains, increasing in size and becoming agglomerated. 3. They last about a week or ten days, drying up without rupture or exudation, followed by slight desquamation, leaving a surface sensitive and reddened. 4. Hands generally hyperidrotic.

Section of excised lesions show that a mild inflammatory action in the papillary layer results in an exudation of serum, which finds its way between the rete cells and leads to their compression, degeneration, and destruction, forming vesicles. The contents dry up and desquamate. The theory of the vesicles being dilatations of sweat ducts, as advanced by some observers, is disproved by these studies, as well as by those of Robinson, of New York, and of Santi, of Berne.

ICHTHYOL VARNISHES.

UNNA, after various trials, has succeeded (*Monatshefte für praktische Dermatologie*, 1891) in presenting a formula for a rapidly drying ichthyol varnish, one that dries thoroughly. It is made up of 40 parts of ichthyol, 40 parts of starch, concentrated albumin solution 1 to 1½ parts, and water 20 parts. The starch and water are first mixed, the ichthyol then incorporated, and finally the albumin added. A compound varnish of carbolic acid and ichthyol may be prescribed as follows: ichthyol 25 parts, carbolic acid 2½ parts, starch 50 parts, water 22½ parts. The ichthyol is incorporated with water by gently warming, the starch gradually added. Other varnishes containing pyrogallie acid, chrysarobin, resorcin, sulphur, etc., may be likewise made; to these the addition of a small quantity of linseed oil is of advantage. The film or coating which is formed may readily be washed off with water.

LEPROSY AND VACCINATION.

TEBB, in a small pamphlet published by R. W. Allen, London, 1891, seeks to show that leprosy is becoming more prevalent, and that its spread in later years may be traced in a great measure to vaccination, as all evidence tends to prove that the disease is contagious by inoculation. As to the treatment, in view of the past and present experience as to its incurability, the writer makes this remarkable statement, a statement which, if accepted and applied to medicine in general, would stay all medical progress: "In view of these experiences, which can be multiplied, and on the ground of humanity, is it not time to put a stop to the torture to which the incurably sick lepers are subjected by drug medication and inoculation, and let these miserable creatures be made as comfortable as tender nursing, varied occupations and amusements and hygienic conditions will allow, and let them die in peace?"

The status of the writer on the vaccination question is made evident by the following: "I think it is obvious that the most effective method of arresting the serious encroachment of leprosy, all the world over, is to discourage the practice of vaccination." If the facts set forth in this small pamphlet are, as they appear to be, well founded, this sweeping statement may not be entirely without justification.

PSOROSPERMOSIS AND MOLLUSCUM CONTAGIOSUM.

In a discussion on this interesting subject (*La Semaine Medicale*, No. 47, 1891) before the second Congress of the German Dermatological Society, recently held at Leipzig, the following views were expressed: Neisser, of Breslau, has seen three cases of psorospermiosis. He believes in the contagiousness of molluscum contagiosum (acne varioliformis of French writers), and regards the affection as a psorospermiosis; also that warts are infectious. Pick, of Prague, thinks the clinical facts prove the contagiousness, in all probability, of molluscum contagiosum, but that up to the present date there has been no positive experimental proof. Touton, of Wiesbaden, has absolute faith in the contagiousness of molluscum contagiosum, and is of the opinion that the micro-organismic causes are the gregarinæ. Von Sehlen, of Hanover, has recently noted a case of molluscum contagiosum where there existed 135 lesions and which had been regarded as syphilitic, the patient at the same time having had an indurated chancre. Kaposi, of Vienna, has seen cases where the growths had appeared suddenly, but he was not able to say whether the disease was infectious or not. Caspary, of Königsberg, was convinced of the contagiousness of the affection. Neumann, of Vienna, states that he has seen cases resembling in appearance a pustular syphiloderm; and Arning, of Hamburg, has observed typical seborrhœic warts appear after massage, and fourteen days later an eruption of molluscum contagiosum upon the scalp and the body.

DERMATITIS HERPETIFORMIS, WITH REPORT OF A CASE.

LESLIE PHILLIPS (*Birmingham Medical Review*, October, 1891) calls attention to this disease, and expresses himself in favor of the distinct entity of the same, the four great diagnostic characters being: 1, the polymorphism of the lesions; 2, the grouped arrangement of the lesions; 3, its pruritus; and,

4, its chronicity. The patient was a girl, of florid complexion, aged fifteen years and six months, who had grown very quickly, and whom her mother described as "shockingly nervous." The disease portrayed the papulo-vesicular type; had existed two years, and had resisted treatment. It made its appearance a month prior to the first menstrual epoch. From the history Dr. Phillips thinks that "the case seems to indicate that there may exist a special sympathetic relationship between the cutaneous nerves of the gluteal region and the outer side of the thighs with the plexuses of the pelvic reproductive viscera."

OBSTETRICS.

UNDER THE CHARGE OF

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POISONING FROM TWO PER CENT. SOLUTION OF CARBOLIC ACID.

In the *Zeitschrift für Geburtshilfe und Gynäkologie*, Band xxi., Heft 1, KRÜKENBERG describes minutely the case of a multipara who had aborted, and in whose case it was thought advisable to curette and wash out the uterus with a quart and a half of warm water to which was added sufficient carbolic acid to make a 2.7 per cent. solution. The curette brought away about a teaspoonful and a half of necrotic decidua, following which the fluid was injected. After three-quarters of a quart had been used, the receptacle holding the fluid was raised upon the shoulder of a woman of average size. During the injection the patient's pulse suddenly failed, and it was necessary to interrupt further procedures. An improvement in the pulse was followed by failure in the respiration; artificial breathing was performed, and the patient gradually rallied to consciousness, presenting symptoms of œdema of the lungs. A specimen of urine passed two hours after the injection showed evidences of carbolic-acid poisoning and contained oxyhæmoglobin. Four hours after the uterus had been washed out, the patient complained of prostration, and expectorated an abundant mucus from the lungs. Her most striking symptoms were oliguria, complete anorexia, and the persistence of a scanty, brownish, vaginal discharge. The spleen was enlarged. Death followed about ten days after the intra-uterine injection. Post-mortem examination revealed acute parenchymatous nephritis with endocarditis. A microscopic examination of the kidneys showed multiple hemorrhages in the connective tissue between the tubules. Krukenberg has reviewed the literature of the subject and concludes that severe intoxication may follow the use of a two or three per cent. carbolic-acid solution resulting from absorption of the poison through the respiratory or digestive tract. In puerperal cases poisoning results from entrance of the solution into the veins of the uterus. The symp-

toms produced by such absorption are due to the effect of carbolic acid upon the blood, and not to reflex action. Hæmoglobinuria is occasionally observed accompanying carbolic-acid poisoning. The observance of the necessary precautions in employing carbolic acid makes it the safest antiseptic for intra-uterine use

DEATH AFTER LABOR, FROM RUPTURE OF PERITONEAL ADHESIONS.

An instance of this remarkable cause of death during labor is given by HOLOWKO (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxi., Heft 2). The patient had lifted a heavy weight, and had strained her muscles by reaching above her head to hang clothing to dry. The patient was a multipara, but complained of great pain which had not been present at previous labors. The uterus was tetanically contracted, and the fœtal heart-sounds could not be heard. The patient's temperature rose to 104°; the pulse was between 100 and 120. On the next day the pains increased, and finally a macerated child was born. The patient's condition became rapidly worse, the abdomen was greatly distended, the pulse 140. Shortly after the expression of the placenta by Crédé's method, the patient died.

Upon post-mortem examination a large quantity of fluid blood was found in the abdomen. The uterus was uninjured. Upon the right side the colon had been bound down by adhesions which had been ruptured by the patient's exertions, and hemorrhage had followed. No single bloodvessel could be found from which the hemorrhage had occurred, and the bleeding must have arisen from the rupture of the adhesions which bound down the large intestine. The symptoms of such hemorrhage are obscure: in the present case no signs of extreme anæmia were observed, while the pulse and appearance of the patient were not those usually seen in severe hemorrhage.

TRIPLE CEPHALHÆMATOMA.

OUI reports in the *Archives de Tbcologie*, No. 18, 1891, a case of precipitate birth, in which the infant fell to the ground between the mother's legs, the cord rupturing three or four centimetres from the umbilicus. Upon examination a tumor was found upon each parietal bone, and one upon the occipital. The tumors were treated by incision and evacuation, under careful antiseptic precautions, and uncomplicated recovery followed.

THE VALUE OF THE IODOFORM-GAUZE TAMPON IN POST-PARTUM HEMORRHAGE.

Additional testimony as to the value of the tampon of iodoform gauze in treating post-partum hemorrhage is given by STAHELI (*Correspondenzblatt für Schweizer Aerzte*, No. 21, 1891). In the clinic at Berne, 9 fatal cases of post-partum hemorrhage occurred in 5424 births during a period of eight years. Of the 9, 6 were cases where anæmia was the immediate cause of death. In 49 cases in which the tampon was used, better results were obtained than by any other method of treatment. These cases were divided into two groups: one, in which hemorrhage occurred from a source which was determined, and the other, in which the tampon was used as a prophylactic against hemor-

rhage. In the first were cases of placenta prævia, transverse position, and other similar complications. In the second class were cases of contracted pelvis, and also of Cæsarean section. In using the tampon, strips of iodoform gauze are preferred; thorough antiseptic precautions should be taken to disinfect the patient and the material which is used.

THE TREATMENT OF ECLAMPSIA.

In the *British Medical Journal*, No. 1610, 1891, ROBERT BARNES states his belief as to the causation of eclampsia, and outlines the principles of treatment as follows: he would interrupt pregnancy whenever marked albuminuria, with or without convulsions, is present. He values venesection highly; he is also careful to avoid contact with the patient before albuminuria is present; salines, calomel, podophyllin, are eminently serviceable. In the eclamptic stage chloroform is best, and occasional inhalation of nitrite of amyl.

RUPTURED RIGHT TUBAL PREGNANCY, WITH PERFORATION OF THE VERMIFORM APPENDIX.

A fatal case of hemorrhage from ruptured tubal pregnancy is described by ROBB in the *Johns Hopkins Hospital Bulletin*, No. 17, 1891. The patient had complained of abdominal pain for a week before coming to the hospital. There was impairment of appetite and a condition of mental hebetude. The abdomen was uniformly distended, with an indistinct sense of fluctuation. Upon laparotomy, the peritoneal cavity was found to be filled with dark fluid blood. The right tube was ruptured; the feeble condition of the patient made it impossible to proceed with the operation. The tube and ovary on the right side, where rupture had occurred, were removed, but the patient perished soon after. On post-mortem examination an extensive perforation and sloughing of the wall of the appendix were found. It is probable that adhesions formed between the appendix and the right Fallopian tube, and that the immediate cause of perforation was tubal pregnancy.

TWO CASES OF "MISSED ABORTION."

CHOLMOGOROFF (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxii., Heft 2) reports two cases of missed abortion which were remarkable for the length of time during which the ovum was retained. In the first of these cases the life of the embryo persisted for four months, while the product of conception was retained for seven months after the death of the embryo. The entire pregnancy persisted for eleven months. In the second case the embryo perished at three months, but was retained for two months after death in the uterus. In neither case was operative interference indicated; the patients were kept under observation, and the expulsion of the ovum followed spontaneously. Both patients made uninterrupted recoveries.

DIAGNOSIS IN DOUBTFUL PREGNANCY.

In the *British Medical Journal*, No. 1610, 1891, NAPIER describes six cases in which the diagnosis of pregnancy was rendered difficult by coexisting dis-

ease of the pelvic organs. To prove that pregnancy does not exist in a case presenting elements of doubt, Napier would first have an enema given to the patient, and then the patient should be anæsthetized. After emptying the bladder the physician should examine the pelvic and abdominal regions by palpation, and should a tumor be discerned it should be noticed whether it contracts rhythmically. The size of the uterus should be carefully ascertained by bi-manual examination. If the uterus is enlarged *ballotement* should be practised. If it is possible that pregnancy has persisted for four or five months, the fœtal heart-sounds should be listened for and also the uterine souffle. It is well to include, in the physician's scrutiny, the secondary confirmatory signs of pregnancy, such as those presented by the breasts, discoloration of mucous membranes, and general disturbances of the nervous system. The only certain sign of normal pregnancy is the fœtal heart-sound in the normally placed uterus.

GYNECOLOGY.

UNDER THE CHARGE OF

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TRACHELORRHAPHY BY THE FLAP METHOD.

SÄNGER's method (*Samml. klin. Vorträge*, No. 6, 1890; *Annales de Gyn.*, Oct., 1891) is as follows: The anterior and posterior lips are seized by double tenacula, and the cervix is drawn downward and to one side. A bistoury is inserted into the anterior lip a little beyond the edge of the laceration, and an incision is carried around the angle and up on the posterior lip; a triangular flap is thus formed, which is turned inward toward the canal. The sutures are now passed, first in the angle of the tear, then through the flap—the same as in Tait's operation on the perineum—the result being that the cervix is restored to its normal condition and the canal is contracted.

[It seems as if in this ingenious procedure the real object of Emmet's operation is lost sight of, which is not simply to restore the cervix to its original appearance, but to excise all the indurated tissue. A mere æsthetic effect is the last one aimed at by its originator.—H. C. C.]

DOUBLE UTERUS RESEMBLING PYOSALPINX.

NITOT (*Annales de Gynécologie*, October, 1891) reports a case of considerable interest from a diagnostic standpoint. The patient complained of severe abdominal pain and was known to have an acute endometritis, so that a tender mass at the left of the uterus was naturally thought to be a pyosalpinx demanding laparotomy. A careful examination by the reporter demonstrated the fact that the latter was the other half of a double uterus, which was also the seat of acute endometritis. There were two distinct vaginæ and cervixes. He thinks that the possible existence of this condition should always be borne in mind.

LAPAROTOMY UNDER LOCAL ANÆSTHESIA.

SCHLEICH (*Berliner klin. Wochenschrift*, No. 35, 1891), reports three cases in which he performed laparotomy, after inducing local anæsthesia with ether and cocaine. The patient first inhaled only sufficient chloroform to render her partially unconscious. The abdomen was then sprayed with ether until the skin was rendered insensitve. Between forty and fifty superficial and deep injections of a weak solution of cocaine (three-fourths of one per cent.) were then made along the line of the proposed incision, no more than a grain of the alkaloid being used. In order to increase the action of the drug the extremities were encircled with Esmarch's bandages. In the operations described (two ovariectomies and a gastrectomy) the patients were entirely conscious throughout the operation, and stated that the pain was slight, even when firm peritoneal adhesions were separated. They had no unpleasant symptoms, and made a good recovery. The method is recommended in cases in which ether and chloroform are contra-indicated.

REPRODUCTION OF THE ENDOMETRIUM.

BOSSI (*La Riforma Medica*, 1891), from experiments on animals, concludes: 1. The mucous membrane of the uterus, when removed in part, or in whole, is reproduced together with the glands. 2. This reproduction takes place slowly, and is sometimes arrested for some time, from unknown causes. 3. The new epithelium is derived from the epithelium of the uninjured glands at the margin of the denuded surface. 4. The new glands are reproduced from the new epithelium, which has assumed a cylindrical form. The practical deduction from this is that curetting is preferable to the use of strong escharotics in the treatment of chronic endometritis, since, if the latter are used the mucosa may be so completely destroyed that its reproduction is impossible.

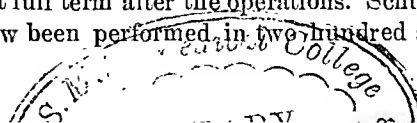
DOUBLE PYOSALPINX IN A YOUNG CHILD.

CHEATTE (*Lancet*, November 14, 1891) reports the case of a child, aged twenty-one months, who died of pulmonary tuberculosis, having had no symptoms referable to the abdomen or pelvis. The peritoneum was studded with tubercles, and both Fallopian tubes were distended with pus. The left tube communicated with an abscess in (behind?) the corresponding broad ligament. The uterus and ovaries were healthy..

[The condition was probably tuberculous salpingitis, the usual cause of pyosalpinx in subjects of tender age. Unfortunately this point was not settled by a thorough examination of the specimens.—H. C. C.]

PREGNANCY AFTER CONSERVATIVE VENTRO-FIXATION.

SÄNGER (*Centralblatt für Gynäkologie*, October 31, 1891) says that about one hundred cases of conservative ventro-fixation have been reported, in thirteen of which delivery occurred at full term after the operations. Schücking claims that his operation has now been performed in two hundred and



seventeen cases, and that twenty-three patients have been delivered at term. These statistics prove conclusively that, in spite of the fact that the uterus is fixed to the anterior abdominal wall, without removal of the appendages subsequent conception, normal pregnancy, and parturition are possible.

In Schücking's operation, as the abdominal cavity is not opened, it is not always possible to absolutely exclude disease of the adnexa. If they are healthy and the uterus is movable, conception and normal pregnancy might occur without the operation, and if diseased, its benefit would be questionable. For this reason ventro-fixation not only places the uterus in a more favorable condition for impregnation, but allows us to predict more positively regarding the possibility of that occurring after the operation.

RETROFIXATION OF THE CERVIX IN CASES OF RETROFLEXION.

SÄNGER (*Centralblatt für Gynäkologie*, October 31, 1891), referring to the fact that a common cause of retroflexion is relaxation of the sacro-uterine ligaments, shows that instead of seeking to cure the displacement by fixing the fundus forward, we would do better to imitate the action of a pessary, by drawing the cervix backward. Thus the cicatrization following parametritis posterior, causes traction upon the cervix posteriorly, thus throwing the fundus uteri forward. Amussat sought to attach the portio vaginalis to the posterior vaginal wall by cauterizing the opposed surfaces. Courty adopted the same practice. Richelôt recommended uniting the two by sutures (called by Pozzi *hystéropexie vaginale*), and Doléris described a similar operation under the name *colporrhaphie rétrocervical*. Freund shortened the sacro-uterine ligaments by suturing them through the posterior fornix, a method which Byford practised independently. Frommel performed laparotomy with the patient in Trendelenburg's posture, and sutured each ligament to the peritoneum of the adjacent lateral wall of the pelvis. Herrick and Hunter denuded opposing surfaces on the posterior lip of the cervix and the posterior vaginal wall, and united them by wire sutures. Stratz actually resected Douglas's pouch and then performed a kolpo-perineorrhaphy, curing fourteen out of fifteen patients. The writer, after reviewing the above methods, thus describes the one which he adopted successfully in six cases:

The rectum having been thoroughly emptied, the uterus is elevated and is held, not in a position of anteversion, but upright, so that the small intestine may not descend into Douglas's pouch. The patient being in the lithotomy posture, the posterior lip of the cervix is drawn downward and forward, and is held by an assistant. The operator palpates the posterior surface of the uterus through both the rectum and the vaginal fornix and locates the sacro-uterine ligaments. A large, curved surgical needle, threaded with a long, stout silk ligature, is now passed to the right of the volsella into the posterior lip of the cervix, and is carried upward and backward an inch higher (the operator's left forefinger being inserted into the rectum to protect it from injury), is swept around and brought out through the posterior vaginal wall at a point half an inch lower than its point of entrance in the cervix. The ends of this ligature are secured with forceps while a second one is passed in a similar manner to the left of the volsella. Each ligature includes the posterior wall of the cervix at the level of the attachment of the sacro-

uterine ligaments, a portion of the upper surface of the corresponding ligament, the peritoneum forming the cul-de-sac of Douglas, and the posterior vaginal fornix. The uterus is now anteverted, the ligatures are tied and cut short, and the vagina is tamponed with iodoform gauze. So little pain attends the operation that it is not necessary to give an anæsthetic. There is no reaction, and the patient need not remain in bed over two days. The sutures are removed at the end of six weeks.

The anatomical result of the operation is as follows: The cervix is carried upward and backward, the anterior and posterior folds of Douglas's pouch are brought in contact, and the sacro-uterine ligaments are drawn downward in the shape of a V, so as to be considerably shortened. All the tissues enclosed in the ligatures are crowded together concentrically, and as the result of an aseptic inflammatory process, a firm cicatrix is formed at the bottom of the cul-de-sac. Of the six cases in which the operation was performed, a permanent cure resulted in five.

VAGINAL HYSTERECTOMY FOR PELVIC SUPPURATION.

In a discussion on this subject, held at a recent meeting of the Paris Surgical Society (*L'Union Médicale*, November 7, 1891), TERILLON favored removal of the uterus in fragments (*par morcellement*), controlling the hemorrhage by including each broad ligament in a single pair of forceps. The operation, he admits, is a difficult one; it is especially applicable to cases of old pelvic abscess with extensive induration and fistulous openings. Richelôt preferred Péan's operation to laparotomy in these cases. In one instance, having been unable to accomplish anything after opening the abdomen, he closed the wound and performed vaginal hysterectomy. Reclus stated that he had had a similar experience, being obliged to resort to total extirpation *per vaginam* in order to completely evacuate the pus. Other surgeons who were present called attention to the fact that sometimes it was impossible to remove the entire uterus, and to reach and evacuate all the collections of pus, even after the organ was removed; moreover, secondary foci might form.

[We have already criticised unfavorably this ultra-surgical treatment of pelvic suppuration, which seems to be favored only by a few French surgeons. When we remember that the presence of pyosalpinx seriously complicates vaginal hysterectomy for cancer, and has a decidedly unfavorable influence upon the result of the operation, so that it is regarded by many as a positive contra-indication, it is difficult to understand how one could deliberately elect to remove piecemeal an adherent uterus, knowing that this complication was present. There would also seem to be imminent danger of injuring the intestine.—H. C. C.]

TREATMENT OF THE STUMP AFTER HYSTERO-MYOMECTOMY.

ALBERT (*Wiener med. Presse*, No. 42, 1891) reports fifty cases, with three deaths. His present method of treating the stump is as follows: After ligating the ovarian arteries he dissects off an anterior and posterior peritoneal flap from the covering of the tumor, applies the rubber cord, and removes the mass. The cervical canal is then cauterized, a stout catgut ligature is applied below the cord, and the latter is removed. A strip of iodoform gauze is car-

ried through the cervical canal into the vagina, and the latter is covered in by suturing the opposite edges of the stump. Finally, the peritoneal flaps are united over the stump, which is thus rendered extra-peritoneal.

[It is only fair to call attention to the fact that this method was devised and successfully practised in a number of cases by Dr. James R. Goffe, of New York, whose plan is even more neat and ingenious than that above described.—H. C. C.]

THE COMBINATION OF VAGINAL HYSTERECTOMY WITH PLASTIC OPERATIONS WITHIN THE PELVIS.

MARTIN (*Berliner klin. Wochenschrift*, No. 45, 1891) reports a series of twenty-two cases of kolporrhaphy performed subsequent to total extirpation of the uterus, where prolapse of the vagina was marked. Under these circumstances, after removing the uterus, he closes the wound in the vaginal vault, suturing the stumps of the broad ligaments between its edges in such a way that they are shut off from the peritoneal cavity. The plastic operation on the vagina is next performed, the result, especially in cases of long-standing prolapsus, being more satisfactory than those in which Asch's method of extirpation and resection of the vagina alone is employed.

THE TREATMENT OF SEPTIC ENDOMETRITIS BY DRAINAGE.

MILTON (*Lancet*, October 17, 1891) uses a silver intra-uterine stem (on the same principle as the Outerbridge dilator), which is held in position by its divergent blades. When in position the tube secures proper drainage, and facilitates the necessary irrigation and applications to the endometrium.

[The most serious practical objection to self-retaining stems of this form is the irritation and local lesions which they cause. The intra-uterine tamponade of iodoform gauze recommended by Dr. Polk is more effective and less objectionable.—H. C. C.]

EXTRA-PERITONEAL OVARIAN CYSTS.

FERGUSON (*Edinburgh Medical Journal*, November, 1891) reports an interesting case of this rare variety of ovarian tumor, in which he removed the cyst by simply stripping up the anterior parietal peritoneum without opening the peritoneal cavity. There was no pedicle and considerable hemorrhage followed the enucleation, which was controlled without tamponing. Commenting on the fact that this was the only case of removal of an extra-peritoneal cyst without opening the cavity, he compares the growth of the tumor, from its origin in the hilus of the ovary, to the action of a fluid wedge (like the amniotic sac in labor), which separates the layers of the broad ligament and then makes its way in the direction of the least resistance. After reaching the pelvic brim it spreads underneath the abdominal muscles and strips off the peritoneum from the abdominal wall, the latter being reflected backward over the uterus and bladder, since it is too firmly attached to them to be peeled off. It is impossible to make a diagnosis of extra-peritoneal cyst before the operation. Tait calls attention to the danger of sloughing of the portion of peritoneum which has been separated, and thinks that in subse-

quent cases it might be wiser to resect this portion and include the edges in the abdominal wound. Suppuration between the muscles and peritoneum resulted from this cause in the case reported, but the pus was evacuated and the patient made a good recovery.

PÆDIATRICS.

UNDER THE CHARGE OF

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THE PATHOLOGICAL ANATOMY AND MODE OF DEVELOPMENT OF MITRAL STENOSIS IN CHILDREN.

SAMSON'S paper (*Jahrb. f. Kinderh.*, xxxii., 1 and 2) is based upon the investigation of forty cases, of which nineteen were fatal and were followed by autopsy. Two classes of this disease are distinguished, the first of which includes those cases in which there is only slight contraction of the ventricular opening, signifying the initial stage of the disease. The second class includes those cases in which the disease is well developed. In the first group the author had observed ten cases. In these were more or less firm fibrinous vegetations, making a ring-like formation around the valve, and extending upon the leaves of the valve and upon the chordæ tendinæ. In five cases the right ventricle was dilated, and in one the left auricle was hypertrophied. In two the weight of the heart was far more than was normal. In one case there was a coexisting congenital anomaly, the aorta springing from the right ventricle and communicating with both ventricles. In the last-mentioned case endocarditic vegetations were present upon the endocardium of the left auricle, and surrounded the mitral opening. Vegetations may disappear entirely in some cases and also the symptoms which arise from them. In other cases the results are dilatation of the ventricle and insufficiency. Simple stenosis was found in nine cases; in eight of which it was funnel-shaped, in one it was slit-shaped. The funnel-shaped stenosis is the more common form in childhood, but not in adult life. The following are the author's conclusions:

1. Stenosis of the mitral valve is not a congenital malformation.
2. It is related to endocarditis, but seldom to foetal endocarditis.

In twenty-six of the author's forty cases rheumatism was a causative factor. In cases which are not of rheumatic origin the cause may consist in bad nutrition or disorder of the nervous system. Of the forty cases, nine suffered with chorea. Stenosis arising from disorder of the nervous system may consist in a valvular lesion which has been induced by violent heart action during a nervous attack. Thus a relation may be established between fright, violent heart action, chorea, and endocarditis.

THE TREATMENT OF CONGENITAL HARE-LIP.

KAPPELER, in the *Arch. f. Kinderh.*, xii., 5 and 6, states that we are indebted to LANGENBECK for a safe operative method for closing hare-lip, and to WOLFF for a method which yields a good functional result—that is, the procurement of speech without nasal twang. The steps of Wolff's method include:

1. Operation under anæsthesia with the head hanging back, after Rose's method.
2. The use of methodical compression.
3. Antiseptic irrigation of the mouth while the head is dependent.
4. Performance of the operation in two stages, the flaps being loosened in the first operation, and five to eight days later the parts being refreshed and sutures passed.
5. The use of a protecting suture and a lateral incision suture.

The method will test the patience of a busy surgeon, but it is the only one which offers certainty of result, and the additional advantage that very young children can be operated upon without danger.

The author has used Wolff's method for adults, performing it at one sitting instead of two. Satisfactory results as to speech were attained by staphylorrhaphy, a soft elastic obturator being placed between the sutured velum wall and posterior pharyngeal wall, the speech being carefully regulated for a sufficient length of time subsequently. Obturators of various sorts have been devised to remedy the defect in the palate posteriorly, several of which are described.

TREATMENT OF THE CAUSES OF LIMPING.

SIMON states (*Arch. f. Kinderh.*, xii., 5 and 6) that one of the commonest and most important causes of lameness in children is coxitis. It calls for attention at the beginning while it is still an arthritis and before there is tumor albus, abscess, or luxation of the head of the femur. Treatment should be general and local, the former having especial reference to general disease like scrofula, and consisting in the use of tonics and stimulants, cod-liver oil during the winter, and phosphate of lime. The local treatment consists primarily in immobilization, and whatever form of apparatus is used this must be a primary consideration. The author approves of the extension apparatus of Guersant, which is provided with weights for overcoming muscular contraction. It is sometimes necessary to use chloroform anæsthesia as an assistant to the apparatus in overcoming this contraction. The Guersant apparatus allows one to make the necessary inspection of the diseased joint and to use the necessary local means. If the leg has no defective position it is well to use that form of Guersant's apparatus which fixes the pelvis and the trochanter completely. Verneuil's and Bonnet's apparatuses are also recommended, though the expense of the latter may be considered an objection to it. If the disease has lasted a long time, and the leg is in a vicious position, with or without ankylosis, re-dressment under chloroform anæsthesia is indicated, and then immobilization if inflammatory conditions have disappeared. Abscesses should be opened and treated with iodoform-ether. If

healing has advanced so far that a relapse into a bad position is not to be feared, the immovable apparatus may be replaced by a movable one. After one to three years healing will usually be so far advanced that the patient can go about on crutches. Since relapses are to be feared, one must not begin to lay aside supporting apparatus until ankylosis of the joint in a good position has occurred. Coxitis is one of the most deceptive of diseases, and almost always ends with shortening of the leg to a greater or less extent. Another cause of lameness consists in congenital luxation of the hip-joint. This is usually incomplete and increases by degrees. By using suitable apparatus the destructive process in the head of the femur may be retarded. Arthritis of the knee- and ankle-joints may be treated at first with revulsives, vesicants, and immobilization. Internally one may give salicylate of soda in the acute stage, and in chronic cases tincture of colchicum in five- to ten-drop doses, suspending its use for a time after eight or ten days. Tonics must also be employed, also massage and weak currents of electricity. Passive movements of the joint should also be practised to prevent stiffness. If there is periostitis or a small abscess, one may inject iodoform ether; if there are large abscesses, curetting under the most careful antisepsis is advisable. If there is inflammation of the trochanter, immobilization is of first importance, and then one may use revulsives or actual cautery, burning even to the bone. To relieve the pain one may give belladonna and hyoscyamus, the limb being enveloped in cotton.

Another cause of lameness is infantile paralysis. Should it begin with fever, the treatment should first consist in derivatives, such as flying blisters and the actual cautery, then hot-air baths to cause profuse sweating. At night one may give chloral, and during the day aconite and nux vomica in doses of ten drops or less. When the febrile period is over the galvanic current may be used every three days for ten minutes at a time. Carefully regulated gymnastic exercises will also be of service, also sulphur-baths, salt baths, and tonics—especially nux vomica.

In paralysis from brain lesion electricity is not indicated. One must lessen rather than increase the excitement of the nervous system. If the brain lesion is of syphilitic origin, iodide of potash should be used. If there is sclerosis of the brain, bromide of potash and iodine may be given in combination. All excitement must be avoided, and the treatment be directed to that lesion which is the fundamental cause of the lameness.

A NEW METHOD FOR THE TREATMENT OF TUBERCULOUS PROCESSES.

LANDERER, in the *Arch. f. Kinderh.*, xii., 5 and 6, states that the favorable result which we are sometimes able to obtain in connection with the treatment of local tuberculous processes is due to the formation of scar-tissue, and hence the transformation of tuberculous processes into solid scars, is the aim of therapy. The tendency to the formation of such tissue in tuberculous processes is very slight, on account of their low vascularity and their slight tendency to energetic inflammatory action. Hence the problem is to cause an inflammation which may result in the formation of this desirable scar-tissue, and this the author has endeavored to do with chemical means, safely and aseptically. Sublimate and carbolic acid may become deposited and be a source of toxic

influence, hence they might not be able to accomplish a permanent beneficial effect. An excellent anti-tuberculous agent is to be found in balsam of Peru, which has been recommended by Sayre in the tamponade of tuberculous cavities. A plaster containing 1 part of balsam of Peru, 3 of adhesive plaster mass, and 1 of wax, was found very useful in bone swellings. In fistulous processes the granulations were scraped away, balsam of Peru was introduced, and a firm scar was quickly the result.

An emulsion containing 1 part each of balsam of Peru and gum-arabic, 9½ parts of almond oil, 10.7 of chlorate of potash, and 100 of distilled water, was found useful for percutaneous injections in tuberculous joints. Since the blood-stream carries tubercle bacilli from the primary focus of infection to distant parts, why may it not also be used to carry means for the destruction of the bacilli? This would furnish a warrant for the intra-venous injection of emulsion of balsam of Peru. Experiments have abundantly shown that foreign matters can be thus carried to various parts of the body. A series of positive results was obtained in puppies by the intra-venous injection of the emulsion referred to. Of course, it is not asserted that balsam of Peru is a specific for tuberculosis. Easily soluble materials of similar action might be found, and then there would be an inducement to give up the expectant method of treatment which has been in vogue so long in the treatment of tuberculosis.

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EXPERIENCE IN THE TREATMENT OF CHRONIC RINGWORM
IN AN INSTITUTION.¹

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FOR the purpose of this communication it is not necessary to mention the name of the institution in which the experience about to be recorded was obtained. Suffice it to state that it was one of the largest and most favorably known in the country. I was requested by the board of trustees to take charge of the affected boys, and if possible to free the institution of the disease, which had long held sway there and was increasing rather than decreasing. Upon consultation with the attending physician, it was learned that ringworm had been prevalent for some years, and that lately it had been spreading in spite of care and attention on the part of physician and nurses. After an examination of all the suspected cases, among which were found a few cases of seborrhœa and eczema, it was found that there were forty-eight subjects affected with ringworm of the scalp, as demonstrated by the microscope, occurring in boys whose age ranged from eight to twelve, the average being ten. The disease in almost all instances was chronic, having existed in most cases from six months to three years, the average duration being about a year. All of the boys were inmates of the infirmary; were isolated, and had been under local, general and hygienic treatment at the hands of the attending physician. The institution was clean, and the hygiene, food, and the care of the patients was satisfactory, the attendants being faithful to their duties, so that there were no apparent defects

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in the management to which the prevalence of the disease, and more particularly its spread, could be traced. There is nothing special to be said as to the general condition of the patients, for while some were puny, with defective nutrition, others were up to the average, and a few seemed to be even robust. The majority, however, it must be said, inclined to be lean and scrawny, and were without much stamina. Out of the forty-eight cases thirty-two might properly be designated as "bad cases," all of these showing the disease extensively developed and in a chronic state. Some of these had been considered as cured at one time or another during the previous year, but sooner or later, after their dismissal from the infirmary, were returned with a recurrence of the disease.

It is not necessary that the symptoms and the several forms of ringworm encountered should be dwelt upon here, interesting as the subject might be. It may, however, be briefly stated that many of the cases illustrated the worst possible features of the disease in its chronic stage, characterized by numerous discrete or aggravated erythematous, papular, follicular, chronically inflamed lesions, invading the scalp in the form of small and large areas. In some instances the whole scalp was more or less involved. The hairs were for the most part broken off close to the scalp, giving rise to light or dark puncta, the disease manifestly having its seat mainly in the deeper portions of the follicles. In other cases follicular scurfiness, with or without badly damaged or broken-off hairs, constituted the most striking feature. Follicular inflammatory papules, subacute or chronic in type, were also common, but a goose-flesh appearance of the scalp, and pustules, were of infrequent occurrence. As everyone knows who is familiar with the disease in its chronic state, the manifestations appear in varied forms and are difficult to describe. The lesions so characteristic of recently formed ringworm were altogether wanting, in place of which there existed a condition having its seat mainly in the deeper portions of the follicles, with comparatively little epidermic involvement of the surface. No cases of alopecia areata, or of any condition even suggestive of that disease, were encountered.

It is my intention to confine the paper to the subject of therapeutics, and more especially with the view of giving the results of the year's work with the several local remedies prescribed. Notes of each case were, in the first place, separately recorded, including the previous history as to duration, relapses, and the remedies employed; the character of the lesions and the amount of disease present; the tendency or not to inflammatory action; the nutrition of the skin, its behavior under treatment, and other peculiarities. Subsequently, with each examination, memoranda were made of the progress of the case and of the action of the remedies, together with the formulæ prescribed. These records were

kept up throughout the course of the treatment, and constitute the data from which this summary is prepared.

The hair, as a rule, was clipped short about once a week, but in some cases the scalp was regularly shaved every few days. In either case the applications were brought into the closest possible contact with the follicles, chiefly by friction with oils and ointments. A few remarks may be made here as to depilation. The theory of this procedure in the treatment of ringworm is good, and should be put into practice, as far as practicable, in all cases. Where the lesions, however, are widely disseminated, occupying the greater part or almost the whole scalp, and, moreover, where the hairs are brittle and broken off close to or even below the surface of the scalp, it becomes almost an impossibility. Add to this the time consumed in the operation, and that even skilled operators can show but meagre results for an hour's work upon such a scalp, it will be found that the application of the proceeding is limited and adapted only to suitable cases. In some of the more chronic and worst cases it was abandoned as being impracticable.

Early in the treatment it became manifest that many of the cases represented the most rebellious types of the affection, and that perseverance, powerful parasitocides, and time would be required to cure the disease, which was literally firmly rooted. In the selection of remedies and the formulæ, due regard was given to the age, development, complexion, and general nutrition of the patient. Those of dark complexion, as was to be expected, tolerated much stronger formulæ than those with light hair. From time to time active treatment had to be suspended in order to note what progress had been made upon the disease, and to allow the inflammatory symptoms due to the remedies to subside.

The more important remedies and the formulæ prescribed, including the combinations and the strength of several drugs used, may now be referred to. If the list seem a long one, it should be borne in mind that not only was the number of patients large, but that owing to the obstinacy of the disease and the long period most of the cases were under observation, there was ample opportunity for experimentation. Moreover, it was noted that a change of remedy was sometimes followed by good results. I do not wish, however, to convey the idea that frequent change of treatment is to be recommended; on the contrary, having once selected a remedy of recognized worth, it is best to persevere with it until positive results, favorable or unfavorable, have been obtained.

From time to time during the treatment it became necessary to use cleansing agents, with the view of clearing the surface of scale, crust, and débris, the result either of the disease itself or of the remedies applied. For this purpose a mixture of soft-soap and sulphur was generally used, preceded by inunctions with carbolized oil; in other cases, where the crusting was excessive, adherent, or painful, a flaxseed-

meal poultice was applied for a short period. This latter was sometimes found to be especially beneficial, not only in loosening the crusts, but also in subduing inflammation. Occasionally the irritation and inflammatory action set up by the stronger remedies was such that for a few days bland or soothing applications were demanded. Of these, ointments composed of a half-drachm of precipitated sulphur to the ounce of oxide of zinc ointment, and equal parts of oxide of zinc ointment and petrolatum, proved beneficial. A salicylic acid paste (of starch and petrolatum), ten or twelve grains to the ounce, and weak ointments of calomel and of white precipitate, were also prescribed with benefit. Lotions, more especially such as contained sulphurous acid and hyposulphite of sodium, were found useful where kerion had developed. Lotions, however, are not to be commended in other forms of the disease.

Reference may now be made to the parasitocides, and in order to present the subject as clearly as possible, and to avoid repetition, the several drugs will be taken up under separate headings.

Carbolic acid: This was used extensively in the form of an ointment and as a mixture with olive oil and with glycerin, in strength varying from a half-drachm to two drachms to the ounce. It was ordered in a large number of cases in the earlier period of the treatment. In some cases entire dependence was placed upon its virtue as a parasiticide, while in others it was prescribed in combination, as follows: Carbolic acid, \mathfrak{zj} - \mathfrak{zij} ; ointment of nitrate of mercury, \mathfrak{zij} - \mathfrak{ziv} ; sulphur ointment, \mathfrak{ziii} - \mathfrak{zv} . In a few cases tar ointment was substituted for the mercurial. As a parasiticide in this disease, the experience in this series of cases would lead me to give carbolic acid a comparatively low rank. It did not prove, either alone or in the combinations quoted, so curative as some other drugs. It was surprising to note the strength in which it could be applied without provoking much cutaneous disturbance, this latter taking the form chiefly of more or less extensive desquamation in the shape of large areas of raised, blistered epidermis.

Tar was prescribed mainly with carbolic acid, or with sulphur or ointment of nitrate of mercury, as already noted, but nothing favorable can be said of it, even for the purpose of allaying inflammatory irritation or scurfiness.

Iodine was prescribed as a tincture, in the officinal and in double that strength, and also in the mixture known as Coster's paste, consisting of two drachms of iodine to one ounce of oil of tar. This was employed at one period freely, but the results were disappointing. While the mixture is efficacious in recent or mild cases, where the fungus is not deeply lodged, it fails in chronic cases, I believe, because it does not remain in constant contact with the epidermis; and, further, for the reason that, from the nature of the application, it cannot penetrate

into the follicles. It is a discutient, and as a consequence the epidermis is soon raised and gradually thrown off, during which period of exfoliation there is practically no remedy in contact with the scalp. This explanation applies to all remedies that act in this manner—for example, to carbolic acid. The constant application of the parasiticide, that the same may enter and penetrate the follicles, I believe to be the desideratum in the treatment. To this end oils and ointments are preferable. Before leaving iodine, reference may also be made to a formula, consisting of iodine, ʒss; carbolic acid, ʒj; and glycerin, ʒj, which acted as a discutient, raising the epidermis in large masses, but, like the other preparations, was not found efficacious.

For some of the cases the oleate of copper was ordered in the form of an ointment of petrolatum, one and two drachms to the ounce. After a fair trial it was abandoned without having exerted apparently any beneficial influence upon the disease. It neither irritated the scalp nor in any degree allayed the symptoms. It seemed to possess, as far as could be noted, no curative merits.

The mercurials were at one period fully prescribed, chiefly in combination with sulphur and carbolic acid. Some of the preparations, however, were employed alone, such as ointment of the nitrate of mercury and oleate of mercury. This latter was given a faithful trial in from 10 to 30 per cent. strength—the results, however, not meeting expectations. Some of the other salts of mercury, as the red and yellow oxides, white precipitate and calomel, were also tried, but nothing favorable can be said of them as parasiticides. Calomel, however, was found of value in subduing inflammatory action, from whatsoever causes due. With the ointment of the oxide of zinc, a half-drachm to the ounce, it was found serviceable when active parasiticides would not be tolerated. Corrosive sublimate, so useful in the localized and early stages of ringworm, was not prescribed, for the reason that, owing to the disseminated character of the disease and the large extent of surface invaded in almost all the cases, it was not deemed a safe remedy.

Croton oil, in sluggish cases, proved especially useful in provoking acute, purulent, inflammatory action. After this had been well established, the milder parasiticides, as the sulphur ointments and lotions, were advantageously prescribed. The oil was usually applied with olive oil, one part to three parts, which strength proved to be safe and efficacious. This would generally produce pustulation after one or two applications at intervals of twelve or twenty-four hours. In spite of care in the mode of application, only a thin layer being put on, the action sometimes would spread beyond the line intended. In one instance only was pain complained of. After free follicular pustulation had been established, in from two to four days, an ointment composed of equal parts of petrolatum and oxide of zinc ointment, or a mild

sulphur or calomel ointment, was applied to control the suppuration. In two or three cases only was kerion set up, and it seems remarkable that this form of inflammation should not have occurred oftener in the whole series of cases. In no instance did it occur spontaneously as a symptom of the disease, but resulting from the action of the oil, it was noted that the disease was benefited, as was to be expected. As stated, however, this pathological condition was difficult to produce, much as its presence might be desired. No unfavorable results followed the use of the oil, although in one or two cases destruction of the follicles in some localities seemed imminent; but I believe even in these cases the hairs eventually grew out again. On several occasions the oil was applied in the form of a moulded wax stick, but the desired action could not always be obtained, and the method was abandoned for the diluted oil and the brush. Cantharidal blistering fluid was now and then used, but possessed no special virtues. Cantharidal collodion was tried as a vehicle for such remedies as chrysarobin, but this mode of application cannot be commended. It may be referred to in passing that notwithstanding the extensive and severe cutaneous irritation and artificial inflammation started and kept up by the remedies, prolonged in some instances in more or less severe degree for months, no case of eczema was developed. In no instance did this disease, from whatsoever cause produced, complicate the ringworm. The observation is one of interest, bearing upon the etiology of eczema as concerns its local origin.

I come now to speak of two well-known parasitides, from both of which good results were obtained, namely, sulphur and chrysarobin. They are, of course, different in their action on the skin, one being comparatively mild, the other a powerful remedy. They were often advantageously prescribed to supplement each other, especially the weaker after the stronger.

Sulphur may be first considered. It was used mainly in the form of ointment, varying in strength from one to three drachms to the ounce. As a weak ointment it was found to be especially serviceable after the stronger remedies, and more particularly in clearing up scurfiness. This condition, scurfiness, was a common and embarrassing symptom—its precise nature, whether parasitic or not, being at times difficult to determine. In most cases it proved to be simple or non-parasitic, but it was nevertheless a persistent and troublesome condition. As has just been pointed out, it yielded more readily to weak sulphur ointment than to any other remedy used. In the strength of two or three drachms to the ounce, it was valuable in those cases where, for certain reasons, a safe remedy was demanded. It proved an efficient, mild parasiticide. As has been already referred to in the earlier part of this paper, it was also prescribed in various combinations, as with soap, and with tar ointment, and carbolic acid, but it was thought to be more useful employed alone.

The most active and potent parasiticide employed, however, was chrysarobin. At one time or another it was in use upon the greater number of the patients, and as it can be spoken of in terms of praise, a short account of it may be given, especially as my experience with it has been different in certain particulars from that of some other observers. It was prescribed in twenty-nine cases. In seven, more or less irritation of the scalp occurred, while in twenty-two there was none. By irritation is meant sufficient local disturbance to demand the temporary suspension of the drug. The strength varied from fifteen grains to two drachms to the ounce of ointment—the weaker ointment, however, having been seldom employed. The strength in common use was one drachm to the ounce. Some of the patients, it is unnecessary to state, tolerated a much stronger ointment than others; thus, in one case nine applications of a two drachm to the ounce ointment were made without causing swelling or inflammation of either the scalp or face. In another instance ten applications of the same ointment gave rise to no inflammation of the eyes. Several cases were recorded in which the eyes escaped even though other parts of the face were slightly inflamed and stained. In one instance only did œdema of the whole face occur, and this after the fifth day. In one patient an ointment of one drachm to the ounce was applied to the whole scalp without giving rise to undue inflammation. These cases are alluded to for the purpose of showing how well borne was the drug in most cases. There was no reason to doubt that it was of good quality. Unpleasant burning sensations and heat were noted in only a few instances. On one occasion pain in the head was complained of, although the scalp did not look painful or even sore, while in some cases the whole scalp became apparently inflamed without giving rise to either heat or pain. In some cases, too, the forehead and sides of the face were stained without involving the eyes. In only one case did the glands of the neck become markedly engorged. The inflammation of the scalp passed off in the form of desquamation of a peculiar character, consisting of large, papery masses of scale. When the ointment used was strong, the scale would come away in large and thick patches. From my experience with the drug in these cases—which, be it remembered, were all chronic and had long been subjected to strong remedies of one kind or another—there would seem to be not much danger from its employment if applied *under the supervision of the physician*, and if due care be exercised in avoiding the face, in making the applications sparingly, and in gradually increasing the strength. It is a remedy always to be handled with caution. It is remarkable that so little excessive cutaneous disturbance and so few complications were noted. It proved the most valuable parasiticide in the list. In the form of ointment it possessed power to penetrate the follicles and to destroy the life of the fungus, and in this latter power

lies its great worth. It may be mentioned that in no instance was chrysarobin used in combination with other remedies; therefore, such results as were obtained may be attributed directly to it.

In conclusion, I would say that it should invariably be applied in the smallest possible quantity and be well rubbed in with a bit of cloth or a mop. Used with caution, the staining of the skin of both patient and nurse may be reduced to a minimum.

In the class of cases of ringworm under consideration, all treatment, at best is slow, but I have no hesitation in giving the preference to chrysarobin. It is the most potent remedy at our command, and the observations and experience here recorded demonstrate that it is not only a valuable but a comparatively safe remedy, and that with due precaution and care it may be applied to the scalp, under the supervision of the physician.

TEN CONSECUTIVE CASES OF EXCISION OF THE KNEE-JOINT, WITH THEIR DEDUCTIONS.

BY JOSEPH D. BRYANT, M.D.,
OF NEW YORK.

IN presenting these cases, I shall draw from my own individual experience rather than from the literature of the subject and from theoretical suggestions. This course is made especially proper, not only by the short time now at one's disposal, but also by the fact that results are more entertaining and instructive than are unestablished theories. In March, 1885, my first paper on excision of this joint was presented to the Orthopædic Society of New York, now the Orthopædic Section of the Academy of Medicine of that city. In that paper two cases, each successful, were presented for examination, namely, Nos. 1 and 2 of the appended series of cases. The belief was then expressed that excision of the knee-joint was admissible for the following conditions:

"1. It should be done when remote or unsound ankylosis appears to be the only result that can be reasonably expected.

"2. It should be done when mechanical and remedial measures, faithfully applied, have failed to afford any permanent relief.

"3. It should be done for vicious ankylosis, or for deformities that cannot be overcome under anæsthesia combined with tenotomy or extension.

"4. It should be done as a substitute for the expectant plan of treatment, when the unfavorable surroundings of the patient, or the slow course of the disease, make hopeless or even doubtful a recovery with sound ankylosis."

I will not recapitulate now the course of reasoning that led up to these conclusions, since the conclusions themselves are not altogether new, nor are they surrounded by any uncertainty of diction. Each case as it appears in the appended tables is of itself quite suggestive of its history and of the final treatment which it represents.

Subsequent to this time (1887) a second series of four cases was presented before the Orthopædic Section of the Academy of Medicine. One of these cases (third of the appended series) died of Bright's disease on the thirteenth day after the operation of excision. As the result of this unfortunate termination, the propriety of the adoption of the following measures in connection with chronic diseases of the large joints or of bones was emphasized by the writer :

"1. A constant and close scrutiny should be made of the functions of the kidneys in all cases of chronic diseases of large joints or of bones, with the view of detecting the first manifestations of the consequent complications of the kidneys in these diseases.

"2. The advisability of operation in severe cases before kidney disease may be manifest; provided all other well-recognized measures of treatment have been given a reasonable trial without substantial benefit.

"3. The advisability of operation at once, when kidney disease is found to exist as a presumptive consequent complication, to limit if possible the further involvement of the kidneys from these causes.

"4. The use of chloroform instead of ether, in operations with kidney involvement.

"5. A careful scrutiny of all the nooks and crevices of the joint, and of the surrounding tissues, that all diseased products may be removed to prevent the infection of the fresh surfaces."

The employment of chloroform instead of ether in operations complicated with kidney involvement is not a settled question by any means; although, in my judgment, the conservative thinkers and workers are strongly predilected to its use in these cases. At all events, without desiring to classify myself at all in this connection, I am accustomed to use and to advise the use of chloroform in such cases.

The care necessary for the careful removal of all diseased products is too obvious to be entitled to the dignity of a mere mention, except that by so doing the attention of the operator is called to the wisdom of exercising close scrutiny, that none such may escape his attention.

Another of this number (fourth of the appended series) presented the question of the advisability of operation for the relief of long-continued and very troublesome rheumatism of the joint, attended with much pain and ankylosis, together with great demoralization of the patient. This patient was told that she would, no doubt, ultimately recover with a stiffened and insecure knee, subject probably thereafter to periodic attacks of pain and tenderness. To this prediction she replied: "If I am to have a stiffened leg anyway, why not have it at once, and avoid

the suffering and confinement to be incurred by waiting? I am willing to accept any additional danger that may arise." It was thought that the result in this case justified the following conclusions:

"*a.* Excision should be done for chronic disease of the knee-joint, when remote or unsound ankylosis appears to be the only means of securing a serviceable limb, especially when the parental or business demands of the patient must continue unfulfilled.

"*b.* If rheumatic tendencies underlie the morbid process, all of the white fibrous tissues connecting the extremities of the bones should be removed to secure all immunity possible from subsequent attacks."

The third case of this number (fifth of the appended series) was one of vicious ankylosis, attended with subluxation of the head of the tibia, together with external rotation and abduction of the leg, dependent on the omission of the proper treatment during the course of a suppurative synovitis caused by a penetrating wound of the knee-joint. The consideration of this case offered the writer an opportunity to emphasize the importance of the following facts in connection with the prevention of deformity, and with the technique of certain steps of the operation for its relief:

"1. The importance of appropriate treatment during an acute arthritis dependent on injury of the knee-joint."

If moderate extension had been applied to the leg in this case, the knee-joint would have become ankylosed in a proper position, the subsequent operation avoided, and the patient's sufferings reduced to a minimum.

"2. The need of caution in making the bony sections for correction of a limb with the number of unnatural positions assumed by the leg in this instance. *a*, Backward dislocation of the head of the tibia; *b*, abduction of the leg from the normal line of the limb; *c*, rotation of the leg outward; *d*, flexion of the leg on the thigh. In this case but one section of an inch in thickness was removed from the lower end of the femur, and two, aggregating three-fourths of an inch, were removed from the upper end of the tibia. After the ankylosis had been overcome, the section from the femur was sawn parallel with the articular surface of that bone, and at a right angle with its long axis. The abnormal deviations of the leg with the femur were corrected, except the posterior dislocation of the tibia, which could not be done before the section of the tibia was made. This bone was then sawn similar to the femur, *i. e.*, parallel with the epiphyseal cartilage. The second section was made so as to permit the leg to be extended as fully as need be without causing the tissues of the popliteal space to be placed on the stretch. The hamstring tendons were not divided, because all other tissues in this situation were found to be contracted as well. Neither were these tendons permitted to be made taut by the apposition of the divided bony surfaces. Had the tension of these tendons been permitted, it is believed that much pain and discomfort would have arisen from reflex contractions of the associated muscles, and possibly also backward displacement of the upper end of the tibia, from the same cause.

"3. This case offers another example of the great care that should be taken to eliminate by scraping and dissecting away all the diseased tissues, osseous and otherwise, and also the attendant sinuses."

The third, and more recent set of cases that have come under my treatment since the preparation of the paper in 1887, have been followed by results, thus far, entirely satisfactory.

CASE I.—William K., aged twenty-one years, peddler, came under observation in Bellevue Hospital, in 1887, for the first time. Family and personal histories good.

He received the first injury of the knee in 1881. This injury was the cause of the subsequent disease. At this time he fell through a skylight, sprained the knee, and was obliged to lie still for four days only. During the next two months the knee was stiff in the mornings, and caused him pain if he carried any weight. Soon after this the leg began to point outward and the knee inward, and the joint was much weakened, although not very painful.

Examination showed the leg displaced outward at an angle of about thirty degrees with the thigh; the internal lateral ligament appeared to exercise no restraining influence on the joint surfaces; the external condyle of the femur had partially disappeared, evidently by absorption; the patella was movable, and lying on the outer surface of the condyle; the knee was incompletely ankylosed; the patient walked on the anterior portion of the foot without pain. A reasonable though fruitless effort was made to correct the deformity of the limb and replace the patella. Finally, about seven years after the first injury, the joint was excised at a clinic held in Bellevue Hospital. The patella was removed through a transverse incision; such necessary sections of the bones of the joint were made as to effect correction and place the limb in a straight position. The divided bone surfaces were held in position with two silver-wire sutures passed through each bone and twisted as firmly as practicable, and horse-hair drainage introduced.

Union by first intention of the inner three-fourths of the wound, and non-union of the outer fourth, was observed at the first dressing, three days after the operation. The outer portion of the wound, and also the outer portion of the thigh, suppurated, the latter suppuration extending up even to the middle and upper third of the limb. However, there was no evidence of suppuration between the sawn surfaces of the bone. The suppurative manifestations lasted about six weeks, the temperature ranging during this time from 100° to 103½° F. in the mouth. Four months after the operation the limb was solid and serviceable, bony union being present.

In the fall of 1890 the patient presented himself again at a clinic, complaining of pain and tenderness at the outer side of the knee in front. This was found to be due to one of the wires, which was quickly removed, and the patient walked joyfully from the amphitheatre, and has not been seen since. At this time the limb was straight, painless, and shortened about one and one-quarter inches.

CASE II.—James D., aged sixteen years, good family history, admitted to Bellevue Hospital January 24, 1888. Two years before admission had a sudden and sharp pain in the knee, without apparent cause, soon followed by swelling and inability to walk. Six months later an abscess

was opened over the outer condyle of the femur, leaving a sinus through which two good-sized bony sequestra were removed, four days after admission to the hospital. At this time the head of the tibia was subluxated and abducted, so that it rested principally on the outer condyle of the femur, and the joint was incompletely ankylosed at an angle of forty-five degrees. Sinuses at the outer and inner side of the joint communicated with diseased bone at the bottom. A large granulating surface, which had been caused by sloughing of the soft parts some time before from the effect of traumatism, covered the external condyle of the femur. Joint excised during a clinic at Bellevue Hospital, February 25, 1888. The method of operation was by transverse incision across the patella, extending between the condyles of the femur. Patella sawn in twain, fragments removed; ankylosis forcibly overcome by flexion; femur sawn across at right angle with its long axis below the line of epiphyseal junction; tibia caused to assume normal relations with femur as to rotation and abduction, then sawn transversely and at right angle with the shaft of the bone above the line of the epiphyseal junction, so as to permit the proper apposition of bony surfaces with the limb in a straight position; abscess cavities of ends of bone were dug out and drained through the bottom externally by means of horsehair; granulating surface over external condyle thoroughly scraped; wound drained with horsehair and rubber tubes, dressed antiseptically, and confined immovably in a wire splint, which was raised from the bed by elastic suspension. Owing to profuse oozing, the limb was dressed on the day following the operation; the second dressing was applied two weeks later. The soft parts healed promptly, except at the site of the scraped surface over the external condyle. However, this wound healed by granulation in the proper time. The pulse and temperature indicated nothing unusual during the entire course of treatment. The limb was encased in a plaster splint, and the patient placed on crutches as soon as the soft parts had become well united. Three months after the operation "good bony union" had taken place, with the limb in a perfectly straight position. The patient was discharged from the hospital three weeks later, with a perfectly serviceable limb.

I have not seen the patient since this time. This case presents no particulars worthy of special consideration, except perhaps the existence of the granulating surface at the condyle. It is fair to presume, I think, that if this surface had not been thoroughly treated in the first instance, so as to have precluded the possibility of infection of the operation-wound, that disaster would have resulted from such infection. It serves admirably, however, to emphasize the use of expedients already mentioned in connection with the earlier cases, such as the digging out and draining of abscess cavities at the bony extremities, thereby economizing in bone, preserving the epiphyseal cartilage, and thus diminishing deformity as to length of limb.

CASE III.—Eliza S., aged twenty-seven years; one brother died of phthisis, otherwise family history good. Since childhood the left knee had been tender, painful, and often swollen, nocturnal sharp, shooting pains especially noticeable. Almost complete ankylosis of the knee at

an angle of about forty-five degrees. On November 28, 1888, excision was performed in substantially the same manner as described in the preceding case. Gelatiniform degeneration of the synovial and fibrous structures of the joint was well marked, together with isolated cheesy changes in the extremities of the femur and tibia. All diseased soft tissues were removed, cheesy products scraped out, and the resulting cavities drained with horsehair as above described. The only difference in technique between this and the preceding case consisted in the use of four steel nails to hold together the sawn bony surfaces. The case made a complete though somewhat tedious recovery, so far as the bony union of the sawn surfaces was concerned. In the line of introduction of one of the nails, a slowly extending caries took place, which was arrested with some difficulty after the removal of the nail and a thorough scraping of the resulting cavity. The hospital records show that the patient was discharged cured seven months after the operation. To the best of my recollection, however, there still remained a small sinus at the seat of the carious process induced by the nail, at the time she left the hospital. At all events the bony union was firm and the limb was serviceable at that time. The long stay in the hospital was dependent on the annoying and obstinate necrosis of the tibia before mentioned. I have no record of the patient since she left the hospital.

Whether or not the caries was dependent on foreign infection in the line of the nail, or on the passage of the nail through a previously existing disease-focus in the bone, I am unable to say. It would seem, however, as if the latter were the more rational conclusion, since the introduction of the other nails was followed by no ill effects, although done under circumstances presumptively entirely similar.

CASE IV.—William D., aged fourteen years, plumber, good family history, admitted to Bellevue Hospital January 5, 1890. At the age of two he fell and injured the right knee severely. He was treated first for a sprain; remained unable to walk for a year, at the end of which time it was discovered that he had sustained a fracture of the lower end of the femur. Splints with extension of the limb were employed for eight or nine months without any benefit. The patient was able to walk, though with much difficulty, during the next four months. At this time the joint was ankylosed in a nearly straight position. However, during the last few years imperfect flexion of the joint had become possible. At intervals since the injury the patient had suffered from repeated attacks of synovitis of varying intensity, usually caused by sprains of the joint arising from trivial violence. In other words, the joint was insecure and fickle.

On admission, the knee was found to be incompletely ankylosed. Flexion at about forty-five degrees was the common position of the leg, the range of motion from this point being about ten degrees, each, of flexion and extension. The leg was abducted, patella resting on the outer surface of the external condyle of the femur, as it had done for years before. At the inner condyle there was located a sharp point of bone, which had nearly perforated the integument. In short, the appearances indicated clearly that at some previous period an epiphyseal separation had taken place at the lower end of the femur, followed by displacement, upward and outward, of the lower fragment,

taking the leg along, thus causing the abduction mentioned before. The sharp bony prominence at the inner aspect was the lower end of the upper fragment. The joint was neither painful nor tender at this time.

The joint was excised January 11, 1890, during a clinic in Bellevue Hospital. On exposure it was found that the femur had sustained the injuries already indicated. The bony prominence was cut off through an independent opening of the soft parts. In all other respects the technique of the operation did not vary in any essential particular from the preceding ones. The epiphyseal cartilages were not disturbed. The sawn surfaces were united by two silver sutures, one placed at each side of the bones, and caused to pass to their posterior surfaces, thus affording the best grip possible on the bones, and at the same time preventing the posterior soft parts from getting between the sawn surfaces. Wound healed entirely under two dressings, without suppuration. Highest buccal temperature $100\frac{4}{5}^{\circ}$. In six weeks the patient was sitting up, with the limb encased in a plaster splint. Nine days later was discharged cured, still wearing the plaster splint.

Four months after the operation union was firm, shortening one and one-half inches, and the patient could walk without any aid. The bones were so sawn in this case as to cause a slight degree of flexion when properly apposed. The reason for this was to accommodate the limb so far as possible to the convenience of the young man in his capacity as plumber. At the present time he is at work, and expresses himself as grateful for the slight amount of flexion, which enables him to labor at a better advantage in cramped positions while sitting.

The appended table contains ten cases which were operated on during the last eight years. Only one died, and this one from chronic Bright's disease, thirteen days after the operation. In fact, operation had been refused, for the reason of the existence of this disease, and it was done finally only at the urgent request of the patient, who possessed a full knowledge of its dangers. Each of the other cases made a prompt and satisfactory recovery except the seventh and eighth of the series. The delay in the eighth, occasioned by caries along the course of a nail, was tedious; still the final result was eminently satisfactory in all respects when last seen. In five of the ten cases isolated abscesses of one or both of the sawn extremities were scraped out and drained through the bottom with horsehair. These cavities closed in each instance without trouble of any kind—healing, no doubt, by means of the blood-clot process of Schede. I usually wire the divided extremities to each other with two silver-wire sutures, carried deep enough to give the best possible command of the bones, and also to exclude the tissues of the posterior surface of the joint. If possible to do so, I deem it better so to saw the bones that, with the limb extended and in proper position, the sawn surfaces will be apposed firmly enough to require the use of no special means for their purpose. The entire patella was removed in the first nine cases. In the ninth, only its lower extremity was removed; the upper extremity was allowed to remain as it was, joined to the femur by bony ankylosis. In

each case, except the second and ninth, the limb was straight after recovery. In the second case it was but a trifle flexed when dressed first, but, owing to the force necessary to keep it in this position, the hamstring muscles rebelled under the undue traction and caused increased flexion. The patient declined to submit to another operation, and left the hospital with the limb slightly flexed and well united. The bones of the ninth case were purposely joined with the leg slightly flexed, for the reason already explained. The degree of shortening of a limb after epiphyseal union is not a matter of scientific importance, because the amount of bone removed must depend entirely on the extent of the disease calling for the operation, and no act of the surgeon intended to preserve the length of the limb is justifiable in this operation when it exposes the patient to the danger of infection. The artisan can supply the difference quite as effectually, and with much greater safety to the patient, than can the surgeon by questionable methods. The digging out of isolated diseased products from the sound extremities of the bones, followed by immediate healing of these spaces, offers the only method known to me of preserving length of bone to the fullest extent.

The wires were not removed in any instance unless trouble was caused by them. In but two of the cases did it become necessary to remove the wires at any time, and in those they were removed after permanent union of the hard parts had taken place, and dependent in each instance upon external violence directed to the site of the wire. The removal was followed at once by rapid and complete recovery. It is possible, of course, that the patients did not all return for treatment of trouble caused by the wires, but sought relief elsewhere.

Case.	Sex.	Age.	Operation.	Result.	Disease.	Remarks.
1	Male	16	Transverse incision; patella divided and removed; bones wired; all diseased soft parts dissected away; antiseptic throughout. Same as preceding case.	Limb straight; bony union in 3 months; good use; 2½ inches shortening.	Fungoid synovitis two and a half years' standing; no sinuses.	Highest temperature by the mouth 101° F.; horseshair drainage; no suppuration; redressed but once; limb immobilized and swung from off the bed.
2	Male	42		Limb slightly flexed; union firm; walked with cane when last seen; 2½ inches shortening.	Abscess cavities at lower end of femur; joint involved; ankylosis in a fixed position; disease of 34 years' standing.	Healed under first dressing; temperature normal throughout; horseshair drainage; no suppuration; limb immobilized and swung.
3	Female	19	In addition to the measures taken in the first case, an abscess of the head of the tibia was scraped out and drained; antiseptic throughout.	Died of Bright's disease on thirtieth day after the operation from exhaustion due to vomiting.	Ostitis of extremities; of femur and tibia, three years' standing; gelatiniform degeneration of the soft parts of joint; abscesses in thigh and leg.	Temperature but slightly elevated; patient had suffered from symptoms of kidney disease for long time before operation; operation done as a last resort.
4	Female	34	Transverse incision; patella removed and fibrous tissues of the joint dissected away; antiseptic throughout; bones wired.	Good union two months after operation; good use of limb; 2 inches shortening; limb straight.	Rheumatic arthritis of one year and a half standing.	Temperature record below 101° F.; wound healed under two dressings; no suppuration; rubber-tube drainage; limb immobilized and swung.
5	Male	23	Oval flap, that amputation might be done if necessary; patella removed; sinuses dissected out; diseased bone scraped out; cavity drained; antiseptic throughout; bones wired	Good union in three months; limb straight; 1½ inch shortening; good use of limb.	Acute arthritis following penetration of joint; numerous sinuses; nine months' standing.	Highest temperature by mouth 101° F.; but two dressings were applied; horseshair drainage; no suppuration; limb immobilized and swung; perfect two years after.
6	Male	30	Transverse incision; patella divided and removed; abscess cavity in tibia scraped out and drained; sinuses dissected away; antiseptic throughout; bones wired.	Limb straight; 1½ inch shortening; slight motion at bony junction; cannot walk on limb three months after operation.	Ostitis of tibia and femur; granulation of joint structures with sinus openings, three years' standing.	Temperature substantially normal throughout; no suppuration; limb dressed three times; horseshair drainage; limb immobilized and swung. The delay of recovery in this case may be due to constitutional syphilis; perfect two years after.

Case.	Sex.	Age.	Operation.	Result.	Disease.	Remarks.
7	Male	21	Transverse incision; removal of patella; section of both bones; extremities wired; horseshair drainage.	Limb straight and serviceable; bony union in four months; 1½ inch shortening.	Arthritis following injury; limb displaced outward 30°, and patella dislocated and lying on outer condyle; disease not acute at time of operation; joint quite firmly ankylosed; patient walking on anterior portion of foot.	Inner three-fourths of wound united by first intention; outer one-fourth suppurated, and the supuration involved the lower two-thirds of thigh. No evidence of bone suppurating; highest buccal temperature 103½° F.; reconvalesced in six weeks.
8	Male	16	Transverse incision; patella sawn through and removed; extremities wired; drained with horseshair and rubber tubing; antiseptic throughout.	Limb straight and entirely healed in four months; bony union; 2 inches shortening.	Arthritis two years' standing; complicated with necrosis of lower end of femur.	Pulse and temperature but little increased; no suppurating; limb immobilized in wire splint with elastic suspension.
9	Female	27	Sawn surfaces joined with four steel nails; otherwise technique similar to preceding case.	Limb straight, and good union at the end of the seventh month.	Arthritis complicated with gelatiniform degeneration of the synovial and fibrous structures of the joint.	Caries occurred along the course of one of the nails, hindering greatly the final recovery, but not interfering with the healing of the sawn surfaces. Temperature but little increased; no suppurating of the sawn surfaces.
10	Male	14	Transverse incision; patella sawn; only lower fragment removed; surfaces wired; antiseptic.	Limb slightly flexed; four months after operation bony union firm, walking unaided; shortening 2½ in.	Acute arthritis following epiphyseal separation involving the joint; lateral displacement; disease of twelve years' standing.	Highest buccal temperature 100½° F.; no suppurating.

SOME CURABLE FORMS OF RHEUMATIC GOUT.

BY EDWARD BLAKE, M.D.,
OF LONDON.

CASE I. *Osteo-arthritis with sapræmia*.—On August 21, 1890, I was consulted by the Rev. —, aged seventy years, residing in the south of Devon. He has consumed vast quantities of tea, but has been a strict abstainer from alcoholic beverages during the whole of his life. He has been, since reaching manhood, a very active worker in a poor agricultural district. A great walker during all weathers in a county where it always rains, he has been quite indifferent to such minor details as wet feet and saturated garments.

Until the November of 1889 he was in the habit of taking his cold bath in the open air, and this even when ice had to be broken to get at the water.

In spite of all this, with one trifling exception, this truly Spartan priest enjoyed an immunity from joint disease until he reached his sixty-eighth year.

Then redness, stiffness, and swelling of symmetrical type commenced in the middle fingers of both hands. Afterward the muscles of the upper arms began to suffer from pain and atrophy. Then the lower extremities were affected in a similar manner, until his excellent walking powers were gradually reduced to a miserable shuffle, so that his longest stride at present extends only to four inches. The knees and the ankles are ankylotic, and the circumjacent cellular tissue is very œdematous.

The synovial adhesions were soon broken down by forcible flexion and extension. The œdema was removed by means of slow, firm, upward electro-massage with a gentle, continued current. The affected joints were well compressed at night, and never allowed to rest during the day. After fourteen days this gentleman was sent home feeling greatly improved in health, and with all his joints in a serviceable condition.

Commentary: Why did this man, in spite of his reckless defiance of the ordinary rules of middle age, successfully evade the bane of later life, suddenly to fall a victim to rheumatism at the ripe age of sixty-eight?

If this remarkable immunity from what befalls so many was due alone to a scrupulously abstemious, active, and self-denying life, why did he abruptly fall a victim to rheumatism in his sixty-ninth year?

With one solitary exception no change, either in his habits or in his surroundings, occurred at the time. The only new element which could be ascertained to have been introduced into his existence, that would in any way explain this late succumbing to the foe, was that at this time he procured some artificial lower teeth. These were fitted in such a way that they could not be removed for needful cleansing. An offensive odor was detected in the mouth. With a great deal of difficulty I suc-

ceeded in extracting the dental plate. The murder was out! The infra-lingual area was found to be in a most foul and filthy condition. Fungating masses of readily bleeding tissue lay bathed in a stinking fluid, swarming with microorganisms mingled with the débris of epithelial cells and of blood corpuscles, decomposing pus, mucus, salivary salts, and fragments of food.

This malodorous mixture was promptly cleared away, and the floor of the mouth was well swabbed out with decolorized iodine.

There seems to exist little ground for doubting that in this instance the septic elements were absorbed by the buccal venules or by the lymphatics, and were carried into the general circulation. They exerted their usual influence over the nervous system, acting as a sedative poison on certain trophic centres. These poisonous particles appear to possess an elective affinity for those nerve-centres which especially preside over the locomotor apparatus. In connection with this case of sapræmia, I will venture to deviate for a moment from my immediate subject. It will not be quite out of order to say that I have made a series of observations of considerable interest to the dermatologist. When putrid pus associated with schizomycetes, streptococci and similar organisms, and with decomposing organic matter from food, etc., is absorbed from the mouth, acne rosacea is occasionally seen on the cheeks and forehead. On the other hand, if pus products be absorbed from the genito-urinary tract, the chin is the favored locality for the acne. These are matters which well deserve careful notice and a scrupulous sifting.

To return to the question of the toxæmic origin of some forms of rheumatism, the problem naturally presents itself: Are the joints poisoned directly or indirectly?

That the septic material is not carried to the joints directly, but that these suffer *via* the nervous system, seems likely from the following considerations:

1. The frequent presence of symmetry, especially in first attacks.
2. The extreme rarity of joint abscess in connection with rheumatic gout.¹
3. The researches of Raymond² make it probable—
 - a. That the muscular atrophy is not due to mere disuse.
 - b. That the muscular changes, though at times associated with neuritis, are not themselves products of that neuritis.
 - c. That the changes in the intra-fibrillary muscular substance, in the neighborhood of an osteo-arthritic joint, are synchronous with the changes in that joint.

¹ Morratt Baker: "Synovial Cysts," Bartholomew's Hospital Reports, 1874, p. 245; 1885, p. 189. Mansell Moullin: "Pyo-osteo-arthritis," Lancet, July 18, 1891, p. 125.

² Revue de Méd., No. 5, 1890.

d. That the two phenomena are due to one common cause.

e. That they are both of them results of reflex trophic change.

The case which has been narrated is not only one of exceptional interest, but it is full of suggestiveness to us in coping with a disease admittedly of a most obstinate and disappointing character.

For a long time we have been accustomed to trace the origin of certain cases of so-called rheumatism to septic absorption. A familiar example is gonorrhœal rheumatism; another is the general synovitis seen often as a sequel to puerperal septicæmia.

What I desire to draw attention to is the fact that this condition may much more frequently underlie various arthritic changes than we have been in the habit of thinking.

In the case which I have described, senility quite naturally, but evidently in error, had been set down as the predisposing cause of the chondro-synovitis, while those vague yet fatally facile etiologic factors, "chill" and "damp," had, as usual, done duty as more immediate causes.

The complete cure of this case without altering any of the outward conditions of life, and the subsequent history of immunity, amply serve to show that neither old age nor climate bore any necessary causal relation to this man's sufferings.

That a slow absorption of pus may take place quite unsuspected by the patient, by the friends, or even by the physician, is well shown by a few cases which I will select from my note-books:

CASE II. *Osteo-arthritis with urethral erosions*.—A middle-aged physician consulted me for reflex chondritis of the symmetrical type. It attacked the first interphalangeal articulations of both ring fingers and of both thumbs. I sought carefully for pus-absorption, and failed at first to find any source. Electric endoscopy revealed two erosions of the premembranous portion of the urethral mucosa. Their removal was followed by a cure of old-standing gleet and by a steady improvement in the rheumatic gout.

CASE III. *Osteo-arthritis and xanthorrhœa with uterine polypus*.—This gentleman brought to me his mother, a lady of seventy years of age, severely crippled with osteo-arthritis. She complained of a corrosive purulent vaginal discharge.

I found that this was caused by a polypus pendent from the cervix uteri.

I removed the polypus and directed frequent douches of warm water and sodium chlorate to be employed.

The progress of the osteo-arthritis was arrested, and under appropriate mechanical and physiological treatment this lady became a comparatively active member of society.

CASE IV. *Osteo-arthritis with antral empyema*.—A nurse, aged thirty years, suffered much from myalgia of the dorsal muscles, especially the trapezei, with crepitation and rigidity of the larger joints. No history of pus. Frontal headache and flushing after food; foul

tongue; dyspnœa; profuse sweating; loss of flesh; anæmia; copious urine laden with lithates; enlargement of the bronchial and the supra-clavicular glands; a slight pain in left eye.

Exhaustive search was made for imprisoned matter. It was then found that the left antrum of Highmore was full of pent-up pus. On liberating this, great improvement set in, and the pyogenic membrane was recommended to be firmly curetted.

The presence of pus in the superior maxillary cavity may be readily detected by Hering's method.

One of Stevenson's twin electric lamps¹ is so arranged in the closed mouth that the lights lie in contact with the hard palate just behind the incisors.

If the antra be empty, light will stream out of both orbits. Of course, the patient is placed in a darkened room.

In 1888 I brought the following case before the members of the Odontological Society:

CASE V. *Gingivitis suppurans and osteo-arthritis*.—Mlle. C. S., aged twenty-seven years; resides at Lyons; consulted me on March 27, 1886, looking pale, feeble, and emaciated. Living in a large house, where I knew the table to be liberal, I could not understand the cause of such extreme innutrition, until the odor from the mouth induced me to examine the teeth. I found the gums in a deplorable state, everywhere inflamed, spongy, with long, crimson granulations suppurating freely, and the teeth themselves defective.

She wore a very well constructed plate, but the new teeth had been set on the old stumps. I believe it is an axiom in good dentistry that this should not be done. On inquiry I found this patient to be low in spirits, irritable, and often very hysterical; sleepy before meals; the muscles of the extremities ache, so that at night she gets to sleep with difficulty; wakes with a sudden start during the night (spinal anæmia), and as a result does not feel refreshed in the morning. Breaks abruptly into perspiration; grows giddy on stooping. Her head feels "muddled" and obscure; has occasional throbbing in the forehead; hair comes off, and the scalp itches. The superficial cervical glands are large and tender. For three years has observed that the eyeballs are very prominent (thyroid not enlarged). There is a dragging sensation at the back of the eyeballs; the pupils are sluggish; they measure usually half a centimetre.

She cannot read longer than five minutes without being compelled to close the eyes for rest; lachrymation in the sunlight. Post-nasal catarrh, granular pharynx. Poor appetite, extreme thirst; always nausea and "sinking," with upward flatus. For the past six months has had a pain in the left side of the abdomen over the site of the sigmoid flexure. For a year has had anal pruritus; sometimes florid blood passes per anum; is greatly troubled with vulvar pruritus during the night; has had a pain at left apex and right anterior pulmonary base all the winter. Auscultation revealed a perfectly healthy lung. Palpitation during dorsal decubitus in bed. Pulse, 90 at 10 A.M.

¹ The apparatus may be procured from K. Schall, 55 Wigmore Street, W.

Always feels either too hot or too cold. During all the cold weather had a persistent pain in right renal region—an analysis of urine revealed a quite healthy state of the urinary tract; this pain proved to be myalgia of the right quadratus. Herpes of left index finger; pain in right hip; both feet ache and swell.

There exists among the best pathologists of the day a half-avowed consensus of opinion that osteo-arthritis is a reflex trophic change, neurotic in its immediate origin.

To view this disease aright, we must dismiss from our minds the erroneous idea that it is in itself a primary disorder. We should get into the habit of viewing it as a symptom merely—a symptom which may appear under an infinite variety of conditions, sharing little in common with one another. This view simplifies the affair very materially. It serves not only to explain why so many different poisons may induce symptoms of rheumatic gout, but it also throws some light on the impossibility of giving a clinical differentiation between gout and rheumatic gout which shall prove to be above criticism. For we know that reflex chondro-synovitis often occurs in the gouty subject. This view affords, too, an easy solution of the celebrated Heberden-node problem. These nodosities are due to fibrillary degeneration of a lateral portion of an articular cartilage. While occurring in the gouty, they are obviously osteo-arthritic in character.

Emil Pfeiffer, of Wiesbaden, has made a very important clinical observation with regard to these wrongly styled "gouty" nodes. He has pointed out that they are preceded by a sense of numbness. This serves to show their neurotic origin, and to prove their relation to certain special forms of neuritis. It reminds us, too, that the gouty poison may do just what many other poisons, such as lead, arsenic, zinc, mercury, alcohol, and sepsin, have the power of effecting; that is, they may so perturb certain trophic joint centres, that chondritis, followed occasionally by periostitis and synovitis, may result.

Other agencies widely differing in character, such as intensely hot weather, profound and lasting grief, may have similar sequels. Thus:

CASE VI. *Rheumatic gout from grief*.—Colonel —, aged fifty years, living on a dry plateau of sand, had all his life enjoyed a complete freedom from rheumatic symptoms. During a warm summer he suddenly lost his only son. Always an unemotional and self-contained man, he betrayed no outward signs of sorrow, but slowly developed chondritis of his right upper extremity. In this case there was no exposure to cold and no morbid poisoning—simply nutrition arrested by grief.

An abrupt removal of centric limb-control, such as occurs during hemiplegia due to cerebral hemorrhage or to intra-cranial embolus, is

frequently followed by rheumatic gout of one or more joints of the involved limb.

This might mean arrested circulation, but as it is usually a remote result occurring after a new and supplementary blood-route has been established, it appears to point more plainly to a process having its origin in the nervous system.

Double synovitis of the knee occasionally appears as a result of syphilis of the spinal cord.

Mr. Cotes, of St. George's Hospital, has seen a case of knee-synovitis result from section of the great sciatic nerve of the same side. I myself saw, in consultation with Dr. Robert Cooper, a remarkable example of general synovitis resulting from a violent blow on the coccyx.

CASE VII. *Osteo-arthritis and arsenical poisoning*.—A gentleman, aged sixty-three years, had, during every autumn, for more than six years, a recurrent attack of osteo-arthritis, accompanied by symptoms of gastric catarrh. At such times the tongue would become covered with a dense yellowish coat.

The joints chiefly involved were those of the upper and lower extremities. As the evenings became cooler, this gentleman was in the habit of having a fire in his bedroom. Added to this, during the winter months, he would naturally spend longer hours indoors. It was discovered by his physician, Dr. Flint, of Scarborough, that the wall-papers contained arsenic, and on removing them the above-named symptoms slowly disappeared to return no more. I cannot do better than give Dr. Flint's account of the case:

"This gentleman's attacks used to begin in the autumn; they culminated in a severe, feverish and intensely prostrating attack of gastric catarrh about March or April. His tongue would be coated with a dense covering like wash-leather. Small portions of this coat would come away, leaving an area bright-red in color and distinctly depressed below the surface. His pulse was intermittent; his tongue and his chin very tremulous; he still has this lingual tremor, and still the pulse is occasionally irregular. *But since the removal of the wall-papers he has been getting gradually better, and this is so in spite of increasing age, for he is now seventy-four.*

"Since that time he has not had to take to bed for gastric catarrh, though for many years he has suffered from acidity and gouty dyspepsia.

"I may add that he built his house about twenty years ago; the papers complained of were most of them French. They were drab in color, and one only showing the green tint, erroneously considered to be characteristic of arsenic. They were hung soon after the house was finished. The health of this old gentleman had gradually deteriorated, and up to the time of the discovery of the arsenic it got worse and worse. There could not have been much arsenical dust floating about. I explain the method of poisoning in the following way: He was fond of having the house very warm with a hall-stove, and during the last five or six years, when he got so ill, he had hot-water pipes laid in his bedroom. During the summer months there was plenty of fresh air.

During the winter, windows being closed, the poison was volatilized by the artificial heat, which also induced a perpetual circulation of dust in the air."

There are on record other cases in which arsenic appears to have induced symptoms resembling those of rheumatoid arthritis: probably this is one of the most circumstantial and reliable that we possess.

When we have to encounter a case of osteo-arthritis, the chief indications are as follows:

Make an exhaustive search for possible poisoning, more especially of two kinds: poisoning from within and poisoning from without. The chief sources of autotoxæmia are coprostasis and neglected suppuration. We must add to them various forms of muscular waste material.

Among the more ordinary causes of ectoxæmia are alcohol and the mineral poisons.

We remove as far as possible all depressing cardiac conditions. There are some mental emotions which we cannot touch. Possibly these exert a far greater influence than might be supposed. Dr. Broadbent has shown that the actual physical state of the muscular fibres of the heart is changed by mental conditions. We have noticed already that intense grief, by impairing nutrition, may lead to osteo-arthritic changes. These tissue-modifications are doubtless exaggerated by disturbance of the cardiac inhibition.

The shame of maternity in the unmarried, the horror and self-loathing felt by sensitive men on discovering the results of impure connection, are potent factors in lowering the tone of the nervous system. That the effects of these are not overestimated I can well believe. They act in a threefold fashion: first, by impairing nutrition through loss of the natural zest for food; second, by disturbing sleep; third, by depressing the action of the heart.

It is exceedingly interesting to note that those distressing emotions which lead to the development of rheumatic gout in men sometimes tend to produce chorea in women. See Dr. Dale's recent valuable contributions to the *Lancet*.

Some vague alliance has long been suspected between these morbid conditions; here we see at least one point of common contact.

The next indication to the all-important one of *tolle causam* is to attend to nutrition. Happily most of the remedies which are now employed tend to increase rather than diminish the appetite. Food should be plain and frequent, avoiding acids, at least in cold weather. It is of much more importance to supply a varied dietary than to point out articles of food to be avoided. Alcohol in all forms appears to increase the chondritis; in large quantities and in a concentrated state it has been credited with the power of inducing this disease, which is sometimes known as the "cab-washer's complaint."

With regard to the question of remedies. It would obviously be absurd, after what has been said, to name a remedy for osteo-arthritis. The remedy must be selected in connection with the whole group of signs and symptoms. In connection with the case of poisoning by arsenical wall-paper, it is certainly significant to note that so acute an observer as Dr. Hilton Fagge has left it on record that if any drug does any good in rheumatic gout, that drug is arsenic.

Last, but certainly not least, at all cost of suffering, movements of various kinds must be kept up; rest must be sedulously avoided—it is simply fatal. In mild cases active exercises, involving all possible movements of all the joints, should be enforced at least twice a day. In graver conditions, where these are impossible, an attendant should perform complete passive movements. The surgeon should throw the whole of his energy into the scale against the seductive charm of the easy-chair, and perpetual movement of every kind and variety should be the watchword of the rheumatic subject.

It is quite possible that these movements, while tending to increase of appetite, to improve circulation, and blood aëration, may also stimulate the red-corpuscle factories which are supposed to exist in the marrow.

Electro-massage has opened the door to an entirely new world in the treatment of osteo-arthritis. No drug nor mineral water, not even hydropathy, can compare for a moment with the exceedingly swift results which follow well-applied massage. The pain, the rigidity, the crepitation, and the local œdema often disappear with astonishing rapidity; even old-established, hardened nodes are sometimes reduced in size. Severe general chondritis, after resisting every kind of medication, has been known to improve to a surprising extent.

If pain predominates, the continuous current is to be preferred. The negative pole is attached to the arm of the operator, while the positive is applied to the nape of the patient's neck or to the trunk of the sciatic nerve when doing a lower extremity.

If paralysis be the most salient feature, the interrupted current is, of course, indicated. When using the faradic current the poles should be much nearer together, just including one muscle at a time. As a matter of fact, it answers best usually to employ a continued current of voltaism with faradism, and we should always commence with a mild one.

At first the massage should be slow and very gentle, usually centripetal, the pressure gradually increasing. To avoid furrowing, a different route should be selected each time. If the skin be moist and greasy, French chalk is a convenient application to diminish the friction.

If the skin be harsh and dry, vaseline combined with some appropriate medicament may be employed.

Gentle traction, combined with rotation or circumduction, is exceedingly useful to overcome the tendency of the limbs to shorten and to prevent or remove adhesions. When the cartilage loses its elasticity and becomes dough-like, the constant traction exerted by the muscles tends to cause a lateral expansion.

In dealing with the fingers a damp cloth may be wrapped round the digit; it is then quite easy to apply the needful pulling power.

These processes, which are tedious and tiring, may be varied by enforcing an occasional full-breath exercise.

After rubbing, each joint should be put through all its varied movements, and it is well, if possible, that the patient should rest for a time warmly covered.

Electric hot baths with a continuous current of from 20 to 200 milliamperes have proved to be most valuable. No salt nor acid should be used. The bath should be of wood.

Turkish baths do not invariably benefit cases of rheumatic gout.

The fact is that osteo-arthritic patients, though the pain may increase, appear to be better in cold air than in hot, if the atmosphere be not charged with moisture.

Mountainous and arctic regions are said to confer an immunity from rheumatism, while warm places like Cairo are very subject to it. Speaking of that town, Lombard¹ says, on the authority of Drs. Hartmann and Pruner Bey: "Le rhumatisme et la goutte se rencontrent assez souvent," etc.

Dr. Davies² says: "In Cairo ordinary chronic rheumatism is very common, both among natives and Europeans. There and nowhere else I experienced it myself."

APHASIA DUE TO SUB-DURAL HEMORRHAGE WITHOUT EXTERNAL SIGNS OF INJURY; OPERATION; RECOVERY.

BY L. BREMER, M.D., AND N. B. CARSON, M.D.,
OF ST. LOUIS.

THE history of the patient, H. T. K., a healthy and well-built man of about twenty-one years, is as follows:

There is neither heart nor kidney disease. Two weeks previous to my seeing him he went to a wedding, got intoxicated, and on his way home

¹ *Climatologie Médicale*, vol. iii. p. 566.

² "Rheumatism in Egypt." Sidney Davies, M.A., M.D., Oxon., late P. M. O. Egyptian Police. *Lancet*, 1890.

fell between the joists of a new building. This was his statement subsequent to his recovery after the operation. He went home and was found asleep in the kitchen of his parents' house the following morning. Except what appeared to be the effects of the liquor, he seemed in his usual health. In fact, nothing was mentioned by him as regards the fall. Being out of work, he stayed at home and rarely left the house, complaining off and on of a dull headache on the left side of the forehead, with exacerbations in the afternoon. Occasionally he vomited, but had generally a good appetite. All this while there was not the slightest suspicion on the part of his family of any serious trouble.

About one week after he had begun to stay at home, while walking on the street, one block away from his home, he suddenly became unconscious and fell. This attack did not last long, however, and he was assisted home by a person who happened to be near at the time. When he arrived at the house he was able to undress himself and went to bed. Shortly afterward it was discovered by his family that he had some difficulty in speaking. He now for the first time intimated to his family that he met with an accident on the night of the wedding. Dr. H. F. Hendrix was called in, who, in addition to the dysphasic disturbance, noted other symptoms, especially a slow, laborious pulse indicative of brain lesion. He observed that the patient was more or less speechless in the afternoon, when a moderate fever of about 101° would set in, whereas in the morning, when free from fever, the difficulty of speech would be much less, and he had many more words at his command than in the afternoon.

When I saw him for the first time, thirteen days after he first commenced to complain, it was stated that for the last three days he had been entirely unable to speak. On the day previous to my visit Dr. Hendrix had found his pulse to be 54.

The patient seemed to be quite rational, judging from the looks of his eyes and the expression of his face. There was no trace of an injury to his head. He understood every word that was spoken to him, every question that was asked. Unfortunately, although not entirely illiterate, the patient was not possessed of sufficient education to render the examination of this form of aphasia very profitable. Only the most elementary questions could be asked of him, the scope of his intellect being limited.

In order to test his mental calibre and ascertain the nature of the trouble of speech, a number of questions were put to him. The principal ones were:

Do you know what this is (showing him a glass)?

Ans. Zer—

Q. Is it a glass?

Ans. Yes.

When a pitcher is shown him, he calls it a "tipper;" a "pen" he calls "riglah;" a spittoon "sempen;" a hat "sem."

Q. Do you call this (the hat) "sem"?

Ans. No.

Q. Is it a hat?

Ans. Yes.

Q. What is this (showing him a match)?

Ans. "Ses."

In order to demonstrate that he knows what it is, he makes the move-

ment of striking a match. A book he calls "pok;" handkerchief, "sempence;" suspender, also "sempence;" for pocket-knife he gives the correct name; but when shown a bunch of keys, he also says "pocket-knife." After this he calls everything that is shown him pocket, *e. g.*, a watch and a button.

When ordered to repeat a word that is spoken to him, he is unable to do so.

He understands perfectly what he reads. He is handed a newspaper, and an advertisement of an entertainment in the Exposition Building is pointed out to him. By putting a variety of questions, some of them misleading, I convince myself that he is familiar with the location of the building, and the purposes it is built for.

He is asked to read the advertisement of a boxing-match. I point out the name of the prize-fighter, and ask him: What is he? Is he a preacher? This causes him to laugh.

In short, there is no flaw in his perceptive and reasoning powers as far as can be ascertained by a necessarily limited conversation, and as far as a short acquaintance will permit.

The most prominent of the other symptoms is a beginning obliteration of the naso-labial fold on the right side; on showing his teeth, the left naso-labial fold becomes much more marked than the right, and the left angle of the mouth is drawn considerably to the left; during an effort at whistling the right cheek puffs somewhat. The tongue deviates to the right. He cannot well draw the right angle of the mouth to the right, or make the right platysma muscle contract. On the latter symptom, however, not much stress is laid, because an effort on the other side is not very successful, and many people, even in absolute health, have not the power of contracting this muscle either singly or together with its fellow.

The grip of the right and left hands seems to be almost equal; he moves his arms with absolute freedom, and nothing abnormal can be seen in his walk. He stands on the right leg with the same ease as on the left.

On being told to alternately flex and extend the right index finger, there is an associated movement of the other fingers; and on trying to move the right thumb, the right index also moves in a rather clumsy, erratic manner. All such movements of the fingers on the left side are executed with precision, no associated movements of the others being noticeable.

Sensation (tested with a pin) is somewhat dulled on the whole of the right side. The main dulness is in the fingers, the palm and back of the hand, and the wrist; it is less higher up to the elbow and shoulder, and much less in the face. But, as just stated, the whole of the left side, including the leg, shows a defect in common sensibility. The same is true of the sense of temperature and pain. Passive movements of the fingers of the right side are not so well perceived as those of the left, showing a lowering of the muscle sense. The passive movements of the toes on the right side, however, are correctly stated. There is no ataxia in the right arm or hand; without hesitancy he carries his right index to the tip of the nose, the eyes being closed, and puts with precision the tip of the finger on the point of a pin.

But on being told to write, he holds the pen in an awkward manner, and drops it repeatedly. He never has been much of a penman, but

has been able to write simple letters. It is now impossible for him to express his thoughts in writing, and even the most commonplace and every-day expressions, when dictated, he fails to fix by letters.

The effort at writing his name is more of a success. While his inability to write words, even the most familiar ones, is very marked, he puts figures with comparative ease. Thus in writing what is meant for "April 28, 1891," he writes 28 and 1891 without the slightest hesitation. This facility of writing figures and difficulty, amounting often to impossibility, of penning words was tested in different ways, always with uniform results. There is no visible abnormality about the eyes; no inequality of the pupils, no hemianopsia. Nothing of a spastic character is observed in any of the muscles of the affected side. Patient is right-handed.

From the foregoing data the diagnosis was made: Blood-clot (probably extra-dural) pressing principally on the foot of the third frontal (Broca's) convolution and the foot of the second frontal (probable centre for writing), impinging also on the face and tongue centres of the left hemispheres.

The next day all the symptoms were more marked; the grip of the right hand was weaker than that of the left; pulse 43.

The operation of trephining was now set for the following day, and the patient transferred to the Mullanphy Hospital. While the preparations for operation were in progress, the patient was once more examined as to the general and localizing cerebral symptoms. As regards the latter, it was found that they had become more vague and indistinct. The patient did not answer questions as readily as on the preceding days; it took him a longer time to comprehend their import. While during the first half-hour of the examination he tried to read from the questioner's mouth, he grew listless and inattentive later on. Although there was no outspoken hemiplegia, he dragged the left foot, when told to walk, which had not been the case on the previous day. The grip of the right hand was also much weaker, the paresis of the right side of the face and the deviation of the tongue more marked. The dulness of sensation had increased in proportion to the motor weakness. How much, however, this was to be attributed to a want of attention and increasing mental hebetude was difficult to decide.

There could be no doubt that the pressure on the brain was rapidly increasing. During the last hour consumed in the examination, the patient grew more and more confused and listless; this was not entirely due to the fatigue attending upon keeping his waning mental faculties at work, for it could be distinctly ascertained that the grip of his right hand became more feeble, and that his right leg became unable to bear the weight of the body—so much so that he was unable to walk to the operating-room, and had to be carried there on a stretcher.

The pulse when last examined was 56 as against 43 on the day previous, this being the lowest figure ascertained.

The operation, by Dr. N. B. Carson.—H. T. K. was admitted into the St. Louis Mullanphy Hospital, April 29, 1891, with the history given above, and the symptoms calling for an operation.

The head having been rendered aseptic, a semicircular flap, with its base forward and its convexity backward, was raised together with the perieranium so as to expose the antero-lateral portion of the skull, with the pterion as a centre. The temporal vessels bled freely, and had to be clamped before the operation could be continued.

An inch button was then removed with the trephine an inch and a quarter behind the external angular process, and the same distance above the base line.

Upon exposing the dura, it presented a dark, cloudy appearance, and the vessels were empty and flattened. All evidence of pulsation was wanting; the trephine opening was enlarged in every direction, more posteriorly, however, than otherwise, until an opening deemed sufficiently large had been made. The dura was then opened to full size of cranial opening, and a clot extending in all directions beyond the cranial opening was exposed to view.

Upon raising the dura, a stream of dark, semi-liquid blood forced itself through the superficial layer of the clot, and splattered myself and assistants two and three feet distant. The thickest part of clot seemed to correspond to the centre of trephine opening, and was immediately under anterior branch of middle meningeal artery, between the dura and arachnoid. With dull-edged curette the greater part of the clot was removed, and the smaller portions subsequently taken away with a very fine flat sponge held in forceps. In this way I wiped out the entire cavity occupied by the clot, which almost reached to the longitudinal sinus above, the base of the cranium below, and at least an inch and a half anteriorly and the same distance posteriorly.

Being satisfied that there was no more bleeding, the dura was replaced over a horsehair drain, but not sutured. A rubber drain was then placed under the flap, which was replaced and sutured, and over all a dressing applied, and the patient returned to bed in good condition. Before I left the hospital, an hour and a half later, the patient had returned to consciousness apparently none the worse for the operation.

6 P.M. (day of operation). Temperature, 98.4°; pulse, 86; reacted very nicely.

April 30 (first day after operation). Temperature, 99.3°; pulse, 70; respiration, 22; clonic spasms in right side of face and right platysma myoides. Is stupid and unable to speak; complete motor aphasia. 6 P.M., temperature, 99.3°; pulse, 70; conscious, but unable to use the right word.

May 1 (second day). Temperature, 98.3°; pulse, 72; entirely free from spasms. In all efforts to speak prefixes "shay" to words. 6 P.M., temperature, 99°; pulse, 76; brighter look; tongue slightly deflected to the right when protruded; elevation of lip improved. Can answer "Yes" and "No" correctly, yes having the "sh" sound very marked. A watch was pronounced "swatch;" keys, "shkeys;" half-dollar, "shalf-dollar."

2d (third day). Temperature, 98.4°; pulse, 66. In answer to ques-

tions, said, "he felt well," that "he liked the hospital." Can speak words without sibilant sound. 6 P.M., temperature normal; pulse, 68; doing well.

3d (fourth day). Temperature normal; pulse, 66; dressed, horsehair removed. Union by first intention. All words spoken correctly. Replied to questions by answers of three words correctly. Sensation in right arm still impaired. Sharp points on right arm recognized as two points one and a half inches apart, on fingers two inches apart. Unable to feel blowing of breath on hands or arm. 6 P.M., temperature and pulse normal. Improving in all respects.

4th (fifth day). Temperature normal; pulse, 54; 6 P.M., temperature and pulse unchanged.

5th (sixth day). Temperature normal; pulse, 62; sensation improving. Can speak and write as well as before the accident.

6th (seventh day). Temperature and pulse normal.

7th (eighth day). Temperature, 98.4°; pulse, 56. 6 P.M., temperature and pulse normal.

8th (ninth day). Temperature and pulse normal. 6 P.M., temperature and pulse normal.

9th. Discharged cured May 18th, nineteenth day after operation.

June 10. Returned to clinic to consult about a numbness or tired feeling in right foot, only after exertion and when fatigued.

The question so often asked, In what cases of intra-cranial hemorrhage are we to operate, and what are the symptoms that should make us decide to interfere in these cases? is, in my opinion, still unanswered.

Keen¹ says: "The importance of operative treatment is best shown by Wiseman, who collected 147 cases treated expectantly; out of this number 89.1 per cent. died, while, on the contrary, out of 110 cases treated actively only 32.7 per cent. died. This certainly points very decidedly in favor of active treatment."

But what surgeon is there that has not seen many cases where the symptoms pointed conclusively to an intra-cranial bleeding, that, after a varying lapse of time, had recovered as effectually as if the trephine had been applied?

A very interesting case bearing upon this subject was reported by Dr. Warren in a discussion following a report of a case of trepanation for sub-dural hemorrhage, reported by Drs. Homans and Walton recently.²

In this case a diagnosis of clot having been made, and while preparations for an operation were under way, the patient began to move the paralyzed limb, and eventually made a complete recovery without an operation.

It is to be remarked, however, that although the diagnosis of clot was

¹ Handbook of the Medical Sciences, page 227.

² "A Case of Successful Trephining for Sub-dural Hemorrhage produced by Contrecoup," Boston Medical and Surgical Journal, February 12, 1891.

probably correct (the reasons for the diagnosis are not given), it was by no means certain. Without going into details, I will simply suggest that hemiplegia without focal lesions does not count among the impossibilities.¹

Again, in rapidly improving cases of hemiplegia without operation, with result of complete restoration, a diagnosis of clot, if it has been made, should be subject to reconsideration, and if the symptoms have not been cogent and unequivocal, the possibility of a transient thrombosis (or embolism) of the sylvian artery should be thought of as being best calculated to explain such cases.

I make this remark on general grounds, and without any special reference to the case which has given rise to it.

Another case, nearer home, has just come to our knowledge, and is reported further on. Here, too, blood-clot was the diagnosis, by Dr. Bremer. For the reason that decided signs of improvement are demonstrable, operation was delayed. The patient is now making a good recovery.

On the other hand we see cases—and I think most often—presenting not any more decided symptoms, that die because their friends will not consent to an operation.

In our case there was no doubt as to the propriety of an operation: first, for the reason that the symptoms of hemorrhage were so very plain; and, second, because the symptoms were rapidly growing worse. While two hours before being brought to the table the patient walked with only a slight halt, he could not move the limb when the time for the operation had come.

In selecting cases for operation, we should not be too hasty in rushing into the cranial cavity, as we have seen some of these cases recover completely, and that, too, without the sequelæ that are said to be dependent upon head injuries.

Unless the condition of the patient demands immediate action, he should be treated with a view of controlling the hemorrhage and causing absorption of the clot.

A careful watch ought to be placed over him, and so soon as there is an evident increase in the symptoms, then, and not until then, should the operation be undertaken.

To one point of paramount importance in the management of intracranial hemorrhage I should like to call attention. It is based on the observation that patients of this class are prone to assume the horizontal position and go to sleep; often this is a sleep from which there is no awaking. Owing to a simple mechanical law, renewed bleeding is apt to

¹ Pillet: "Hémiplégie sans lésions en foyer de l'encéphale," Progrès Médical, 1890 No. 7.

take place much more readily in the horizontal than in the erect position. The patient, therefore, as soon as the nature of the trouble has been established, or is only suspected, should be propped up by pillows, and kept in that position as long as possible. I am certain that many an unlooked-for catastrophe might be averted in this manner. My experience is, that this simple precautionary measure is only too often neglected by physicians and laymen.

(BY DR. BREMER.)

Considering the present advanced state of cerebral localization, the diagnosis was comparatively an easy matter. The case presented a group of the clinical focal symptoms which form, so to speak, the very groundwork of local diagnosis in brain disease. That a blood-clot was the cause of the trouble could not be doubted considering the manner of development of symptoms and the history of the case.

Although there was no external injury, no fracture of the bone, not even a lesion of the scalp, to point to the seat of the trouble, there were the more exact and unfailing localizing brain symptoms. Compared with these, the visible external injury plays nowadays an inferior rôle. This is well illustrated by cases in which the external injury exists but the site of the symptom-producing clot is opposite to that of the injury.

Such a case has lately been reported by Homans and Walton,¹ in which a hemorrhagic clot was diagnosticated on the opposite side of the injury (this being on the right side). Aphasia was also one of the localizing symptoms. Contrary, however, to our case, the brain substance itself was involved, which gave rise to Jacksonian epilepsy. This was, as remarked above, entirely absent in our case. In Homans' and Walton's patient it was probably a branch of the middle cerebral artery that was ruptured, implicating the cerebral cortex directly and causing discharging symptoms; whereas, in our instance, the smooth and shining arachnoid intervening between the clot and dura could be made out very plainly.

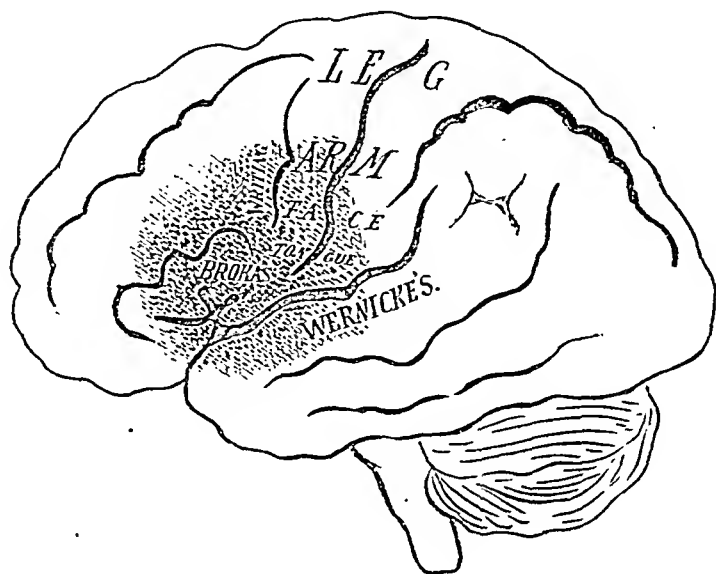
Keen² says: "No diagnosis can be made at present between hemorrhage from the middle meningeal and the middle cerebral." This is probably true for most cases. It is the generally accepted opinion among competent observers. Possibly, however, the presence or absence of irritative (spastic) phenomena may enable us, in a limited number of cases, to differentiate between cerebral and meningeal hemorrhage. In the former, localized and serial spastic disturbances are most likely to appear, owing to the direct involvement of the cortex; in the latter, provided the arachnoid is not torn, as in our case, the paralytic symptoms will be the first to appear. General epileptic convulsions, as the

¹ Loc. cit.

² Reference Handbook of the Medical Sciences, vol. viii. p. 226.

result of diffuse brain pressure, will, of course, not count as a differential diagnostic factor.

The extent of the clot covered a larger area than had been expected. It is outlined in the accompanying figure, and shows the various centres



pressed upon, and the outline is, of course, approximate. It did not extend to the top part of the Rolandic region—the leg centre. The fact that the latter became implicated is probably to be explained by a pressure through the brain matter on the corresponding part of the internal capsule. It is seen that the clot extended down to the first temporo-sphenoidal convolution, which would account for the difficulty on the part of the patient, on the morning before the operation, to understand what was said to him (word-deafness). The darkest shade denotes the greatest thickness of the clot, and is over Broca's convolution, the foot of the second frontal and the lower end of the anterior central, which is in keeping with the prominent symptoms—motor aphasia, a gradual paralysis of the face and tongue. The arm and wrist centres are less implicated.

A brief allusion to a few points bearing on this and similar cases will, perhaps, not be out of place. How is the fact to be explained that, during the first week after the supposed occurrence of the hemorrhage, there were almost no symptoms of brain pressure, and that suddenly, a week later, alarming cerebral symptoms developed, which gradually grew in intensity almost to a fatal issue?

The concurrent testimony of observers of this class of cases goes to show that the bleeding has ceased before the operation has been resorted

to. Whether arterial or venous in origin, the blood is found in the coagulated, not in the fresh or fluid, state.

In our case the clot was old; no distinct layers could be made out. Such layers, if present, would indicate different successive hemorrhages. There was a discharge of tarry blood breaking through the clot on opening the dura, but nowhere was there any evidence of recent hemorrhage or a recent coagulum. The anterior main branch of the middle meningeal artery was empty, and pressed flat like a ribbon. The same was true of two of its anterior subdivisions that came within the field of operation. The probability, therefore, is that the hemorrhage was stopped long before the operation; that the clot had acted as a sort of tampon, compressing the ruptured branch and the main artery, and that by this "auto-tamponade" any further hemorrhage was prevented.

It will be remembered that the diagnosis of extra-dural clot had been made. This was done on account of the insignificance of the initial symptoms and of the comparatively slow development of the graver ones. *A priori*, it stands to reason that a hemorrhage between the skull-bone and the tough and unyielding dura is apt to be more limited, and to produce less rapidly cerebral symptoms than sub-dural hemorrhage, although it is a well-established fact that just in the neighborhood of the meningeal arteries the dura is less firmly attached to the bone than elsewhere. Besides, in the vast majority of ruptures of a middle meningeal artery or its branches the hemorrhage takes place upon the dura. For these reasons the diagnosis of extra-dural clot seemed to be the more likely one. This was a mistake, and, I believe, a mistake that could have been avoided on the ground that probably all meningeal hemorrhages due to indirect violence are sub-dural. This point will be enlarged upon further on.

Now, taking the sequence and course of the symptoms into consideration, one would, basing one's reasoning upon simple mechanical laws, be apt to conclude that, one of the smallest anterior branches having burst, the hemorrhage was at first extremely limited and insignificant, and pressing moderately on the left frontal lobe, anteriorly to the well-known centres, no positive symptoms developed, and that only the general ones of mental dulness (the pulse was not examined during the first week) and vomiting were present; that gradually, or in turns, slight fresh hemorrhages ensued, pressing successively upon the centres for articulate and written speech; on those of the angle of the mouth, tongue, arm; then upon the centre for the interpretation of words heard (first temporo-sphenoidal convolution). Thus, *e.g.*, the fall and short attack of unconsciousness one week after the accident might be due to a recurrent hemorrhage. Again, in this manner might the inability of the patient to understand what was said to him shortly before the opera-

tion be accounted for, if one does not prefer to ascribe it to a lowering of the intellect preceding a gradually approaching coma.

Much more likely, however, to my mind, is another explanation. In meningeal, as in cerebral hemorrhage, there are two factors which have to be considered as productive of brain pressure. The one is the mass of blood extravasated, the other is the amount of reaction which is bound to arise in consequence of pressure-irritation.

The brain will tolerate a certain amount of local pressure, according to the nervous make-up of the individual, as has been established by the clinical histories of a number of cases of cerebral tumors which may exist without symptoms, regardless of their size, until suddenly their presence becomes manifest by paralytic or discharging symptoms. For there is a limit of tolerance in cases of clot as well as of tumor.

Thus, in our case, the at first gradual, and afterward rapid, supervention of paralytic symptoms might be explained in this way: There is a clot extending over a large part of the left hemisphere, covering a number of cortical centres. The brain mass accommodates itself to the pressure when gradually developed, and there are only slight symptoms until the branches of the vessels that enter at the base of the brain—viz., the anterior perforated space—respond to the irritation coming from above. It is, to my mind, conceivable that after a certain amount of pressure has been borne by the cortical and sub-cortical substance, the branches of the lenticulo-striate artery and other neighboring ones react according to the old pathological maxim, *ubi irritatio ibi affluxus*.

This afflux of blood means increased pressure from the opposite (under) side of the clot—a pressure which not only bears upon the cortex, but also on the conducting fibres below, including the internal capsule. The rapidly-developing complete hemiplegia involving the leg, which for a long time was intact, may be accounted for in this way.

Considering this rapid progress of alarming symptoms, the operation was performed in the nick of time, and may, without doubt, be set down as a life-saving act.

The establishment of the exact source of inter-meningeal hemorrhage is often a matter of impossibility. Whenever there is a fracture of the skull, the trunk of the middle meningeal artery or vein may, of course, be lacerated, together with other soft parts, by direct violence. It is also said that hemorrhages of the middle meningeal artery have been observed without injury either to scalp or bone. Merkel¹ points out that it is principally the anterior branch of the artery that is ruptured. But it is hard to understand how an artery or vein of the dura mater can be ruptured by concussion due to indirect violence, unless there is a

¹ Handbuch der topograph. Anatomie, 1885, vol. i. p. 68.

hemorrhagic diathesis, a disease of the vascular wall, a miliary aneurism, for instance. Such abnormal vascular state we have no right to assume in a young man of twenty.

Judging from the clinical course of our case we must, I think, dismiss the idea of arterial hemorrhage, whether of a smaller or a larger branch, at once. The sudden increase of pressure such as would be likely to result from arterial bleeding would make more pronounced and violent symptoms at the start. A slow oozing from a vein and the gradual formation of the clot, allowing the brain sufficient time to accommodate itself in a measure to increased pressure, is the more probable process.

But how are we to conjecture the cause and nature of venous meningeal hemorrhage? Is it probable that from indirect violence, from mere concussion (for it is not at all likely that in the fall the head of our patient was struck) a healthy vein should burst?

Perhaps the interesting researches and observations of Dr. Mittenzweig¹ will, if enlarged and confirmed, throw some light on this vexed question.

Mittenzweig quotes Bergmann, who, in his book on Injuries of the Head, says (§ 260):

"The hemorrhages into the so-called arachnoidal sac are principally derived from those veins which pass from the upper and lateral parts of the cerebral hemispheres out of the pia to the longitudinal sinus. These are simply torn off, a tearing which, of course, can take place only by a considerable displacement of the brain *in toto*. Since it has been observed in some cases even without injury of the bone, it proves the very considerable change of form the bony cranial capsule is capable of, before its limit of elasticity is passed."

Now, from a series of observations Mittenzweig arrives at the conclusion that in a number of persons abnormal anastomoses between cerebral and dural veins exist, being the remnants of foetal conditions which are normal. It is easy to understand how such abnormal venous anastomoses will tear on even slight displacements of the brain mass, and that an absolutely healthy and young individual may suffer from sub-dural hemorrhage as a result of comparatively little violence.

This probably happened in our case, and if anatomical research and clinico-pathological experience should bear out Mittenzweig's investigations and conclusions, an additional differentially diagnostic point may have been furnished us as to extra- and sub-dural hemorrhages.

In Dr. Carson's report it is stated that on the day following the operation muscular twitchings about the face and mouth were observed. I believe that these post-operative spastic phenomena are to be ascribed to capillary hemorrhages in the cortex of that part of the brain pre-

¹ "Subdurale Blutungen aus abnorm. verlaufenden Gehirnvenen," Neurolog. Centralbl., 1889, p. 193.

viously compressed by the clot. Continued pressure will produce a weakened, possibly a more or less atrophic condition of the cortical capillaries, or possibly venules and arterioles. The sudden removal of the pressure and the sudden rush of blood will then give rise to minute hemorrhages referred to. In a case (to be published by us in the near future) of a large sarcoma of the dura mater, pressing upon the motor area, such hemorrhage took place throughout the cortex directly and indirectly involved by the pressure as could be demonstrated by a post-mortem held two weeks after the operation. That capillary hemorrhage will result from even so slight an insult as light pressure of the surgeon's finger for the purpose of ascertaining the consistence of underlying cerebral structures, I could demonstrate in a case of epilepsy operated upon by Dr. Prewitt, of this city. The wrist centre was excised and the ablated piece of cortex showed throughout recent hemorrhages into the perivascular lymph spaces, and the brain substance itself. Thus, I think, the twitching, which was absent before the operation, might be accounted for after it.

The long interval between the accident and the appearance of any decided pressure symptoms is noteworthy. In one of Wiseman's cases the interval was still greater, being eleven days.

Owing to the shortness of time allowed for examining into the dysphasic troubles of the patient, and chiefly owing to his want of education, the yield in this respect is rather meagre.

In conformity with the topical lesion, the aphasia was of the ataxic variety, combined with agraphia. The latter was somewhat obscured by clumsiness of movements of the hand and fingers, owing probably to the simultaneous pressure upon the hand and finger centres. As usual, there was, in addition to motor aphasia, paraphasia and paragrammia.

It is rather singular, that, after the patient had tried to pronounce a number of simple and short words, he all at once was able to say "pocket-knife." The tendency to call everything "pocket" after he had succeeded in pronouncing this word finds its analogue in other reported cases of motor aphasia. A beaten path for certain words and syllables remains intact amidst many others that are destroyed or obstructed, and every effort at speech is bound to travel this path.

The meaningless monosyllables of "zer," "sem," and "shay" must also be looked upon in this light. In prefixing these easily pronounceable syllables to other words he "oils," so to speak, the machinery of speech. With some people such meaningless and nonsensical prefixes are physiological; they not only fill out a gap in the thinking process, but they act as starters in the speech-mechanism.

In his efforts at writing he succeeds best, as is also usual in these cases, with his own name and with figures:

At the last (fifth) French Congress of Surgery, held in Paris (April,

1891), Dr. Michaux presented a case of non-traumatic meningeal hemorrhage cured by trephining. The topical diagnosis was made from focal symptoms. The clot was under the dura over the Rolandic region. It occurred in an alcoholic, and Dr. Michaux thinks the rupture due to alcoholism and uræmia.

In the case under discussion the alcohol certainly played, pathologically, a very subordinate part, and it is, to my mind, very doubtful whether there ever has been a well-authenticated case of idiopathic meningeal hemorrhage of the type exemplified by our case. If such is said to occur in an alcoholic, it must be remembered that a toper is more liable to accidents which are forgotten than anyone else.

This is not the place to discuss the necessity or justifiability of trepanation for blood-clot. In our case there was a vital indication for operative interference. Whether in a number of other cases it would be safer to trust to the healing and absorbing powers of the membrane and adopt the expectant plan, is a question as difficult to solve as the propriety of operating in given cases of appendicitis and ileus. But the concurrent testimony of the surgeons of to-day is in favor of operation, even where less urgent symptoms are present. Even with much less extensive hemorrhage than in our case the outlook as to complete absorption is far from favorable. Epilepsy and mental impairment are the usual sequelæ of neglected blood-clot in the brain, and it is certainly much more in keeping with the principles of conservative surgery to operate early and remove the possible and even probable cause of epilepsy, than to wait until the latter has declared itself, and the epileptic change has taken place in the brain.

A case of undoubted meningeal hemorrhage in which an operation was desisted from is the following :

On June 23, 1891, Mrs. L. fell, with her two-and-one-half-year-old child, down a flight of stairs and landed on a pile of bricks. She had managed to hold the child in her arms and believed that it had escaped injury. After her arrival home the child went to sleep. When it woke up, it vomited, lost consciousness, and passed into general convulsions. It remained unconscious for six hours, during which time it had a number of general convulsions, while it jerked continually with the right side in the intervals.

After the spasms had ceased, it remained unconscious for four hours. On waking up, it was paralyzed on the right side. After a few hours, however, the right leg moved slightly, whereas the arm remained perfectly motionless. At the same time the child had lost its speech.

An examination, on June 25th, revealed a slight depressed fracture large enough to hold the tip of the forefinger, and situated about three inches above the meatus auditorius externus. The child was aphasic, right leg somewhat paretic; knee-jerks absent on the right, normal on the left. Right arm paralyzed. Pupillary reaction normal. Pulse 70 and 65. Diagnosis: Depressed fracture of the parietal bone on the right

side; meningeal hemorrhage by contre-coup on the left, involving the arm and motor speech centres. No paralysis of facial muscles could be made out.

On the 26th, she spoke a few words; an occasional slight voluntary movement of the right arm had been observed. June 30th, the child was able to stand on the leg and moved the arm much better. She had been able to walk a few steps. From this on the improvement was steady and rapid. July 10th, all paralytic symptoms had disappeared. The mother claims that the child talks much better than before the accident.

The question in this case would arise, whether it would not be a safe plan to at least elevate the bones of the depressed fracture, and, Is not this fracture, situated in the binauricular line, apt to lead to epilepsy later in life?

That such is not always the case I can prove in a young man twenty-two years of age, who, when five years old, had meningeal hemorrhage, from the effects of which (left-sided hemiplegia) he recovered in the course of six weeks. There is now a very perceptible depression about two inches above and a little anteriorly to the right auditory meatus. He has never shown any sign of epilepsy.

October, 15, 1891.—The patient H. T. K. has been hard at work in a brick-yard for a couple of months. He is in his usual health with all his faculties intact, and a steady worker.

THE TREATMENT OF INFLUENZA AND ITS SEQUELÆ.

By EDWARD W. WATSON, M.D., AND ROLAND G. CURTIN, M.D.,
OF PHILADELPHIA.

As far as drugs are concerned, treatment in pure influenza, of the explosive variety, probably has but little effect. Every practitioner possessed his own specific, and the number of such specifics was so great, and their nature so various, that it seems almost certain that few, if any of them, materially shortened the disease. The simple form of influenza was generally a brief, self-limited disorder.

A few of the recommendations found in the papers for grip specifics, and employed by obscure practitioners, and gathered from conversations with men engaged in treating the disease, may be given: Quinine, quinine and whiskey, salol, salicylic acid, salicylate of soda, antipyrine, antifebrin, phenacetin, Dover's powder, camphor, bromides of potassium and sodium, olei santal, ammonium chloride, atropine and belladonna, alkalies, aconite, veratrum viride, jaborandi, boneset, aromatic sulphuric

acid, also oxide of zinc, horseradish, cloves, asafoetida, onions and garlic, and even cutting one's whiskers, if a man.

The simple or explosive form of influenza, exhibited most in the early cases, and occurring less frequently as the epidemic progressed, was best managed and in the most rational way by rest and warmth, with entire quiet of both mind and body. This was far more important than the whole combined pharmacopœia, but was little heeded when advised. The drugs that seemed to be of use were few. The treatment can best be studied in detail as it adapted itself to the varying symptoms. In the early stage of chill—bed, warmth, warm diluent drinks; as the fever rose, and intense headache and pain in the limbs and sacral region developed, antipyrine certainly afforded relief to all the symptoms and seemed to shorten the dry stage, induce earlier and more profuse perspiration and subsidence of fever; but the next symptom in the natural history of the disease being intense prostration with subnormal temperature and a leaky skin, the depressing element in the drug employed became a serious consideration—the two depressions, that of the drug and that of the disease itself, connecting on the second or third day or later, were sure to increase the difficulty and perhaps danger, and retard recovery. Antifebrin or acetanilide being the most dangerous of this group of remedies in this respect, and antipyrine almost as bad, phenacetine, as the least so, retains its popularity and still remains the best, though not without objection; and in some rare cases they all failed to have any antipyretic effect.

It might be noted in passing that from numerous experiments performed daily by the use of a copyrighted combination, also beginning with "anti," one is led to think whether a considerable amount of this depression may not be obviated by combining any of these drugs with caffeine. Salicin, the use of which was begun by one of the writers at the earliest period of the epidemic, and continued pretty steadily until now, presents many strong claims, and comes as near to being a specific as we can get with the drugs now in our possession. The tonic properties of salicin, the large doses in which it can be safely given, and the almost immediate results in most cases in reduction of temperature, diminution of pain, and production of perspiration, quite overcome the drawback of its bitter taste. It seemed, also, that its early use was followed by fewer relapses than the use of other means. Yet, that it was by no means a specific in the sense in which quinine is a specific in malaria, was proved by certain obstinate cases which took very large doses without any apparent effect, and in the sequelæ, other than in pure relapses, attended by the symptoms of the initial attack, its value was doubtful.

Salol was very extensively used in combination with quinine and phenacetine, and was relied on by many practitioners. Salicylates or

salicylic acid also incurred the objection noted above—that of producing secondary depression.

Quinine was very generally employed by the populace as a tonic antipyretic, and also as a preventive, and its previous reputation seemed to warrant its use, but it evidently had but a limited field—that of combating the secondary depression and improving the digestive tone.

Camphor, alone or in combination with quinine and phenacetine, strychnine and other agents, was relied on by some to relieve both pains and fever, in the early stage.

Chloride of ammonium and the bromides were extensively used. Dover's powder seemed the most efficient way in which to give opium, and produced excessive, early, and long-continued sweating. The few cases noted as treated in this way made early recoveries. Opium and morphine were well borne, but proved unsatisfactory. Asafœtida, valerian and the valerianates soothed the excited mental condition in numerous instances and gave relief. Sulphonal was the best hypnotic, in a disease which had insomnia for one of its marked symptoms. Sulphonal and phenacetine in suppository—ten grains of the former to six of the latter—produced sleep and free perspiration in a few hours.

Alcohol, in the second stage, given in proper quantities, was beneficial, but in too large doses increased the vascular relaxation and favored perspiration. It was useful in all stages, except the earliest, when it increased the headache and pain. Drunkards, as a rule, were free from influenza, probably because alcohol fortified the system against that exhaustion and depression which favored its onset, and in the actual exhaustion which followed the initial fever, and in the recurring periods of depression throughout the oftentimes long course of the disease, the medical attendant would have been utterly at a loss for any stimulant that would stimulate but for its use. Ammonia and other traditional stimulants did not give the same relief. Tinct. cinchoni. comp. in full doses, or other bitter tinctures, were employed with some success, where the bitter principle contained in them, if given alone, did little or no good. Extract of malt in the later stages was of great benefit.

Boneset in the form of tea, combined with heavy coverings and warmth to the feet after the manner of ancient domestic practice, claimed some success, but was often rejected by the stomach.

Exhaustion during convalescence was best treated by the phosphorus compounds. Where the syrup of the hypophosphites was obnoxious, a substitute suggested by one of the writers to his chemist—a tablet containing its ingredients—was largely used and with excellent effects, the ingredients being hypophosphites of strychnine, quinine, and iron and alkalies (pil. hypophosphit. cum quinæ co.).

Opiates which, as said above, failed generally to benefit the initial discomforts, failed also to exhibit their usual soporific effects even when

given in largely increased doses; they stopped neither cough nor pain, but often seemed to aggravate both. This might have been from excessive elimination through the increased secretion (catarrhal) of the emunctories, or from a diminished power of absorption due to the catarrhal condition of all the mucous surfaces. The relief afforded in the cough—so general after the first stages were passed—by atropine or oil of sandal, was either from arresting excessive secretion or from a sedative effect upon the nerve centres, or both.

Atropine seemed to be rapidly absorbed, and to be efficient in very small doses; in fact it was poorly borne, one-five-hundredth grain four times a day having often a decided effect in the adult. Oil of sandal may have acted by diminishing secretion, but in whatever way it produced its effect, that effect was quite certain and well marked in the majority of obstinate coughs. The old-time expectorants generally aggravated matters, and were almost universally abandoned. They may have intensified the already existing catarrhal condition.

Chloride of ammonium was the only old expectorant extensively used throughout the epidemic. By some it was claimed as the best remedy for influenza in all its various varieties. In its use, however, even in carefully selected cases it was disappointing; perhaps the benefit, where derived, came from its property as a stimulant.

A number of active practitioners at a medical society, being questioned as to what, in their opinion, was the most nearly specific treatment for the disease in its simple form, gave the following answers derived from their own personal experience: Phenacetine, $2\frac{1}{2}$ grains every two hours; antipyrine and digitalis, the latter to prevent depression of the heart; Dover's powder with quinine; antipyrine or acetanilide; phenacetine in doses of $7\frac{1}{2}$ grains each at intervals; acetanilide or phenacetine with strophanthus; pilocarpine gr. $\frac{1}{4}$ hypodermatically to break up the initial fever—this, the gentleman advocating it said, produced almost immediate ptyalism and profuse perspiration—which he followed by tinct. gelsemium gtt. ij every two hours until the pains were quieted.

In theory, ergot and the bromides should have the effect of diminishing secretion by acting on the capillaries; but the combination has not, to the writers' knowledge, been generally tried, and, like other means, might prove quite inefficient, owing to the active morbid process not being overpowered by the drug.

Phenacetine seems, of all remedies, to possess the most evidence in its favor, as most safe and active; if too long continued into the stage of subnormal temperature and exhaustion, it too would prove unsafe. In the oftentimes protracted catarrh of the lungs following the first stage, when the chest would be filled with sonorous and sibilant râles—simulating asthma—a pill containing phenacetine gr. jss, atrop. gr. $\frac{1}{400}$ — $\frac{1}{500}$, strychn. gr. $\frac{1}{100}$, and quinine gr. j (or if thoracic pain was a prominent

symptom, camphor in gr. j doses instead of quinine) given four times a day, and kept up steadily, gave very evident and satisfactory results; the râles disappeared, and the power of the lung to expel its secretion seemed markedly increased.

A very important question in the treatment was in regard to going out of doors. Patients were almost universally eager to get out and utterly careless of admonition. How soon an influenza patient was fit to encounter the outside air was, in every case, a very serious question. Caution urged one way, the patient's inclination another. One element in going out was generally forgotten—the *fatigue* of going, a thing entirely separate and distinct from the atmospheric effects of outdoor air. Probably in good weather, riding, if the patient be properly protected, is safer than walking, the element of fatigue being partly eliminated. Generally speaking, it is well to wait until all lung symptoms have entirely disappeared, until expectoration is but a trifle and cough only occasional, the sweating and chilliness gone, and the feeling of fatigue, and then choose the best and brightest day for a very short exposure the first time; night air is injurious for a long time after *apparent* recovery.

As for air and temperature in the sick-room, it can only be said that the room should be kept as fresh as possible, not over 70° or below 68°, and with as little draughts permitted as can be. In our late warm winters, to keep the temperature as low as this without freely admitting the outside air through open windows has been often quite impossible. The patient, however, should be well shielded by screens and curtains from direct currents of cold air.

Mingled with the cases generally known and recognized as influenza, have been many with obscure abdominal symptoms due to catarrhs other than pulmonary; the treatment of which deserves especial notice. The cases referred to presented the same initial general symptoms, but nausea speedily appeared, and in many everything, no matter how bland, was at once rejected. Here cocaine in gr. $\frac{1}{12}$ doses every hour, given in a teaspoonful of cold water, gave the most direct results; if the bowels were loaded, it could be combined with fractional doses of calomel. Externally, rubefacients and heat; for food, milk heated to 180° and slightly salted, given in small quantities frequently, or alternated with beef-tea; if these were rejected, champagne could be given, or brandy and soda, by the stomach; all other feeding was necessarily rectal. The most successful nutrient enemata were animal broths beaten up with the yolk of an egg and a small quantity of brandy or whiskey, and given in quantities of half a pint every four or six hours. After a few days the stomach gradually but surely regained its power.

These abnormal attacks are extremely prone to occur in whole families; in fact, it is a pretty sure thing when the first case in a family occurs

of a certain type that succeeding cases will assume the same type. This holds good of even such unusual forms as the renal and hepatic with jaundice, and the laryngeal form. The fact itself points apparently to a different means of entrance of the poison into the system in the different varieties of influenza.

The contagion of influenza has been doubted by some observers, but we think without good reason. Contagious and infectious would best describe it, like scarlet fever or smallpox, but with a power of reaching further than either, and not, as the public seem to think, and the profession did, that it is purely an aërial poison not emanating from a sick individual but travelling independently of persons.

The subject of the treatment of the sequelæ of influenza is a very large one. The numerous affections appearing in the wake of the original influenzal attack require special treatment in each case, symptomatic and general.

To give a general but brief outline of such treatment we must enumerate, as far as possible, the sequelæ generally met with, and the complications most frequently seen of influenza with preëxisting disease. The sequelæ of influenza were like the contents of Pandora's box—only no "hope" was left behind. The ordinary sequelæ were bronchitis, pneumonia, and local catarrhs, meningitis, neuralgia, neuritis, paralysis, heart weakness, general nervous prostration, insomnia, obstinate dyspepsia, diarrhœa, diphtheria, anæmia.

Anæmia, phthisis, chronic bronchitis and asthma, Bright's disease, and valvular disease of the heart were often complicated by influenza.

The best remedies for pain were mustard plasters, blisters, and dry heat. For neuralgic pains of short duration, these remedies were generally followed by a cure. Persistent pain (neuritis) is treated on general principles.

Myalgia: Injections of atropine or cold water hypodermatically, rest in bed with relief of pressure, and rubbing with stimulating embrocations, generally spirit of camphor alone, or lin. chloroformi; the latter in violent headache were also very useful.

For bronchitis: Ammonium chloride when expectoration was free quebracho and olei santal, with menthol or olei menth. pip. when cough was dry with asthmatic râles. Whiskey and glycerin—a popular remedy—allayed the tickling cough, and when combined with quebracho caused freer expectoration.

For pneumonia: Counter-irritation and the usual treatment, avoiding depressing measures as much as possible, with free stimulation. In the later stages of pulmonáry catarrh, atropine with ammonium iodide were used with great success.

Local catarrhs: Violent coryza can be alleviated by menthol, with

liquid vaseline, cocaine in 4 per cent. solution, and by the snuff of bismuth, pulv. acaciæ, cocaine and morphine acetate.

Gastric catarrhs: By hot water, hot infusion of *hydrastis canadensis*, gtt. x, fluid extract, to one ounce of hot water; by cocaine in gr. $\frac{1}{12}$ doses every hour; and by withdrawal of food, with rectal feeding. Catarrh of the bladder—of which several very severe cases were seen—while resisting ordinary means, usually yielded promptly to a combination of antipyrine gr. ij, morphine gr. $\frac{1}{8}$, atropine gr. $\frac{1}{250}$, every four hours and the use of the catheter when retention occurred. Urethral catarrhs were very obstinate—occurring under circumstances and at ages when suspicion of gonorrhœa was impossible—and slowly subsided apparently regardless of treatment.

Meningitis was, in some respects, the most serious and fatal sequel; this was especially true in the spring of 1890. Its treatment was by the bromides, by ergotine and belladonna per rectum, and counter-irritation to the occiput. Allied to it was the peculiar sleep, which in the aged often occurred just when the lung symptoms seemed about to yield—and too often ended in death. This was the most frequent manner of death among the aged in the fall of 1891.

In paralysis: Strychnine gave the best results, with hypophosphites. Electricity in the early period increased the pain—the nervous system was already exhausted by over-stimulation.

The treatment of neuritis was unsatisfactory; it progressed slowly, the pain travelling from centre to periphery of nerve. Blisters and iodine, local stimulating applications, and hypodermatics were employed with varying success.

In heart weakness: *Digitalis*, *strophanthus*, *cactus*, at times seemed effective; caffeine was undoubtedly so.

For insomnia: Sulphonal was the best and safest hypnotic. (Somnal, theoretically, should be the best drug.) Ammonium bromide, in excited mental states, at times restored mental equilibrium.

The obstinate dyspepsia occurring especially after the abdominal attacks, seemed due to impaired muscular tone of the stomach. When an apeptic condition existed pepsin was indicated, and gave a certain amount of relief. Generally mild stomachic stimulants were beneficial. Mineral acids and ordinary bitter infusions were worse than useless, irritating the stomach and increasing distress. Alcohol in the shape of brandy or whiskey, taken with pounded ice, was as useful as anything.

General nervous prostration often extended over long periods without any discoverable local cause; it was always worth while, however, to examine the urine with care. Sometimes a catarrhal nephritis, sometimes a faulty digestion or hepatic inaction seemed to underlie the general condition in latent form. These cases, by enforced rest and attention to local complications, gradually recovered. These cases and nervous

cases generally, were very-disappointing when sent to the seashore during convalescence.

Sweating: This was sometimes exceedingly profuse and very hard to control, owing to the vaso-motor paresis. The best remedies were atropine and alcohol in proper quantity. Oxide of zinc and aromatic sulphuric acid were sometimes of use. In some cases the side on which the patients were lying, in bed, would be dry while the upper side would be bathed in perspiration and *cool*; on a reversal of position the dry side would become moist, and the previously moist side dry; this suggests that the stimulation of a certain amount of heat might control the relaxed vessels.

Diarrhœa was best controlled by rest, proper diet, milk and broth, and as remedies bismuth, with or without opium, or bismuth with cocaine; when gastric pain existed especially cocaine; when internal pain, opium and spirits of chloroform. The short attacks often ended in diarrhœa, and after it all other symptoms, engorged lungs, etc., disappeared at once, but induced diarrhœa *did not seem to have the same beneficial effect*.

Diphtheria as a complication was exceedingly rare, until the fall of 1891. So much so as to lead to the belief that the two diseases were antagonistic. In the early fall of 1891, however, in Philadelphia the reported deaths from diphtheria increased greatly above the average, though mostly in the outlying wards it seemed in the cases seen by the writers to have followed rather than preceded the influenza, in one case appearing during the progress of an influenzal bronchitis, in a man aged seventy-six, in the second week of the disease.

Anæmia: In some cases of acute anæmia after influenza, the blood-count ran down from 3,500,000 to 4,500,000 to the c.mm., and hæmoglobin was below 50 per cent. Iron was disappointing as a remedy, the hypophosphite excepted where combined with the other hypophosphites.

Phthisis undoubtedly developed from influenza. The catarrhal condition remained and caused a breaking down of the lung tissue. These cases while presenting the physical signs of phthisis and terminating finally in death, showed during life, on examination of the sputum, no bacilli. In the fall of 1891 in the Philadelphia Hospital the sputa of 14 cases of phthisis, examined (often several times and by different methods) for bacilli, showed them abundant in 4, few in 6, absent in 4 cases. In the fall of 1890, after most of old cases of phthisis had died, 12 out of 28 cases were found free from bacilli, and invariably with histories dating from an influenzal attack.

Many chronic catarrhal cases also, when the lungs were involved, resembled and were mistaken for phthisis. Cough, diarrhœa, night-sweats, anæmia, dyspepsia, and fever were present, with physical signs

which agreed with phthisis in all but dulness on percussion, which was absent.

The differential symptoms were: an almost non-purulent sputum, absence of emaciation, and at last a sudden disappearance of fever and all physical signs, with rapid recovery. (These cases may have formed the basis for the claims of some recent remarkable specifics for phthisis.)

FOSSA PRÆNASALIS.¹

BY THOMAS DWIGHT, M.D., LL.D.,

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THE purpose of this paper, besides the description of a specimen, is (1) to attempt to prove that two quite different conditions are described by this name; (2) that the *fossa prænasalis* proper is not at all a simian feature, but that, while it occasionally reaches its greatest development in man, the nearest approach to it is not in the ape, but in the seal; (3) to discuss its significance.

The subject may well be introduced by a passage from Topinard's paper, "Du Prognathisme alvéolo-sous-nasale:"² "But the anterior border of the nose is not always simple, with a sharp crest. In the first degree it becomes dull; in a second it becomes thickly rounded, measuring in diameter from 1 to 4 mm.; in the third degree it is decomposed into two lips bounding a little triangle, which, joining that of the opposite side, forms a lozenge-shaped surface. Of these two lips, continuous with the side of the nose, the anterior bounds the nasal fossa in front; the other forms the anterior border of the anterior palatine canal. So far, the line separating the nasal fossæ and the subnasal region is clear. Now the difficulties begin." He then points out that there is occasionally a middle transverse line between the two others, and that sometimes its importance increases so that it seems to form the limit between the nose and the face. Then, again, the lozenge-shaped surface is divided

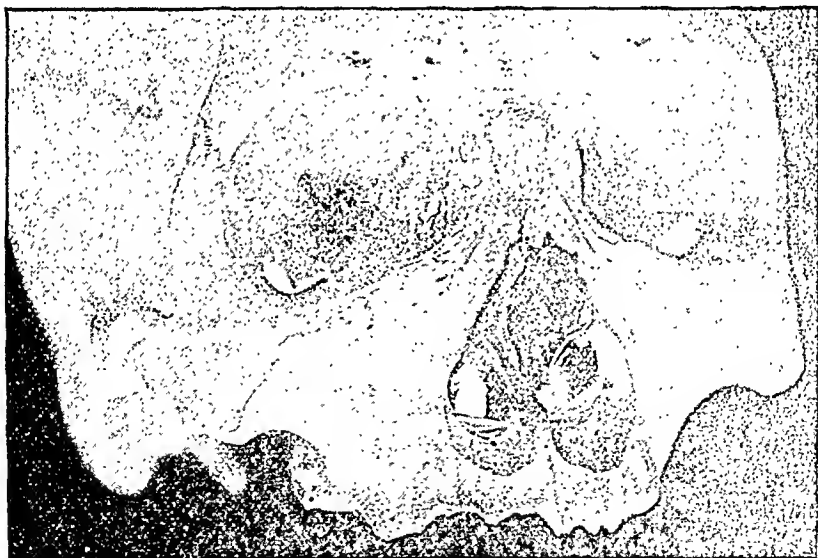
¹ This paper was to have been read at the meeting of the Association of American Anatomists during the Congress held at Washington in September, 1891. Its title appeared on the programme of the meeting, but I was unexpectedly prevented from attending. An article entitled "Ueber die onto- und philo-genetische Bedeutung der verschiedenen Formen der Apertura pyriformis," by Dr. Mingazzini, of Rome, appeared in the *Archiv für Anthropologie*, Bd. xx. Heft 3, which was published in October, 1891. As in some respects my views are the same as those of Dr. Mingazzini, I wish to state that, though not quite in shape for publication, my paper was originally in all essentials what it is now.

² *Revue d'Anthropologie*, tome i., 1872.

into two, of which the posterior—about one-third of the whole—looks backward toward the nasal fossa, while the anterior two-thirds slant downward on the face. The anterior lip practically disappears, though traces of it may be seen running downward in various ways. This is what he calls the double vertical gutter. “Of this,” he continues, “I distinguish two degrees—one in which the inclination is moderate and traces of the anterior lip still visible; the other in which these traces join quite below the nasal spine, or are lost in the direction of the space between the two middle incisors, or between the middle and the lateral one. In this case the line of demarcation between the nasal fossæ and the subnasal surface has disappeared; they to some extent form but one, and recall a similar disposition in many apes.”

“Two other striking varieties are still to be mentioned. I have met them only in the lowest types of the Melanesians.¹ The anterior and middle lips of the above-mentioned slanting surface remain strongly marked, and are separated by a deep depression—as it were, a digital one—which is elongated from above downward, measuring sometimes as much as a centimetre in length; or it may be developed crosswise, decomposing the nose into two stories—two true steps.”

FIG. 1.



The two last-mentioned variations seem practically one. They constitute the true *fossa prænasalis*, differing essentially from the vertical or

¹ This term is sometimes used to denote all curly-haired inhabitants of the South Sea Islands. Vide Ranke: *Der Mensch*.

simian gutter. The fossa has well-marked anterior and posterior borders. The gutter is, as its name implies, a slanting communication between the nose and the face.

The present specimen (Fig. 1) shows two very remarkable true *fossa prænasales*. It belongs to the Warren Museum of the Harvard Medical School, being one of the J. Mason Warren collection of skulls. It is the skull of a Sandwich Islander. The sex is probably female. The forehead is low and retreating, the superciliary ridges rather prominent. The parietal eminences are far back. There is a median depression in the region of the parietal foramina, and another in the supra-occipital. The head is brachicephalic, the index being 84.3'. The teeth are wanting, but it seems from the sockets that they must have projected considerably. The skull, however, is not prognathous. The alveolar index is 101.98.¹ The nose is very broad, the nasal index being 66. There is a deep prænasal fossa on either side, the left one being much the larger. It deserves very well to be called "digital," for it suggests a hollow that might be made with the end of the finger. The lines bounding it are very sharp. The anterior ones are distinctly the continuations of the lateral borders of the nasal opening. They curve upward to the nasal spine, making the entire opening of the shape of an inverted ace of hearts. The lines bounding the fossa behind do not arise, as Topinard teaches, by the splitting of the border, but begin at the lower border of the ridge on the superior maxilla for the inferior turbinate bone, at the front of the latter bone, well inside the cavity of the nares. The prænasal fossæ, therefore, curl up on either side, inside the nose, and are bounded alone by the inferior turbinate crest. On the left this superior border is almost 7 mm. long. On the right it is poorly marked, and about half as long. The left fossa is longer, broader, and deeper than the right one. The measurements are as follows:

	Right.	Left.
Antero-posteriorly	1.5 em.	1.8 em.
Transversely	1.7 "	2 "
Depth	circa 0.5 "	circa 0.8 "

Both fossæ are marked by grooves, apparently caused by small blood-vessels.

This is the place to mention that there is at least an indication of a bone in the median line just back of the nasal spine between the

¹ Camper's angle has become obsolete. The gnathic or alveolar index of Flower, showing the amount of projection of the upper jaw, is obtained by comparing the distance from the anterior border of the foramen magnum to the alveolar point with that from the foramen to the nasal point, the latter being called 100. A skull with an index below 98 is orthognathous, from 98 to 103 mesognathous, and above 103 prognathous.

præmaxillæ. It seems to be made by the fusion of two subvomiers (*les os subvomériens* of Rambaud and Renault), and illustrates the frequent coincidence of errors of ossification with such anomalies.

Another peculiarity of this skull deserves notice. It is a tendency to curves in the borders of openings, such as the nares, the anterior ends of the sphenoidal and sphenomaxillary fissures, and the jugular fossa. There is in all these what might be called a similarity of treatment. This is the true *fossa prænasalis*. It is a different structure from the ape-like gutter (shown in Figure 2, representing a part of another Sandwich Island skull), with which Topinard has classified it.

FIG. 2.



The literature of the subject is extremely scattered. The following synopsis has no claim to completeness. One of the earliest references is by Dr. Neill, of Philadelphia.¹ He says that in the Caucasian head there is a sharp anterior border of the nasal opening reaching to the spine. In the African this crest is wanting, the surface is flat, and the orifice of the nose resembles that of the monkey and other inferior mammalia. In the foetus the crest or ridge is wanting and the surface flat. Now, it is clear that this description is of a simple rounding off of the anterior border, or at most of a gutter-like formation, and not of a prænasal fossa.

The following extract from a paper by Hamy, "*L'épine nasale dans l'ordre des primates*"² is very much to the point. He writes thus of the

¹ THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, vol. xix, 1850.

² Bull. de la Société d'Anthropologie de Paris, 1869.

region in question: "Certainly the difference will be striking to one who has compared only the faces of an orthognathous man and of a gorilla or chimpanzee. In fact, in the white man the orifice of the nasal fossa is bounded by a sort of crest; in both these apes the border is quite dull [*mousse*] Thus, at first sight, the difference is great, but between these two very different faces there is a gradation of several human prognathous types, of which we have measured the forward nasal projection. Just as the face grows forward the spine becomes shorter, the crest bounding the nasal chambers is less developed and less sharp, and often is replaced by a border which approaches remarkably that of the anthropoid. In the most marked cases the nasal fossa ends in a gentle slope to which it is not possible on the skeleton to assign any anterior limit. The two inclined planes join each other at the median line, *in front of the nasal spine*, which is thus apparently thrown back into the inside of the nasal cavities. Let this arrangement be a little exaggerated and you have in man a conformation which may be compared to that which you have been able to see on the specimens and drawings of anthropoids which I have shown."

The importance of this quotation must excuse its length. It is certain that this description does not apply in the least to the skull shown in Fig. 1, but that, excepting as to the position of the nasal spine, it applies perfectly to another Sandwich Island skull in our collection, represented in Fig. 2. This is a fine specimen of the simian, or better, the vertical gutter.

Ranke, in his work on the Bavarians, expresses the opinion that this *hässliche Missbildung* is related to dolichocephaly, but that a strong proportion of such skulls in a population may account for its somewhat more frequent occurrence among short skulls than would be expected. Among the ancient Bavarians it occurred in 4 per cent. of the men and 7 per cent. of the women. It is found in 32 per cent. of the population of Ebrach. Ranke concludes as follows: "The prænasal fossæ are therefore a formation which very rarely occurs among the ancient Bavarians, and, on the other hand, remarkably often among our central German population of northwestern Bavaria. Therefore the prænasal fossæ lose their significance as signs of a low race." I must confess that it is not clear to me how many forms Ranke includes under the term.

Unless I am mistaken, Sir William Turner does not use this term in his "Challenger" reports, nor does he describe a true fossa. Of a skull from Oahu in the Sandwich Islands, he says that the sides of the nasal opening were rounded at their junction with the floor of the nose.

Zuckerlandl, in his account of the skulls of the "Novara" expedition, gives pictures of three skulls from Sumatra, Sumbawa, and Bugis, each of which presents a typical fossa. He writes as follows: "The separa-

tion of the *fossæ prænasales* from the remaining unaffected facial surface of the præmaxilla, and from the posterior plane of the floor of the nares, is made by more or less developed ridges, convex below, which I cannot regard with Topinard as parts of the borders of the nares."

Schaaffhausen¹ states that this fossa is often found in Malays, and that it occurs particularly in races with flat noses and broad nostrils. Reviewing Zuckerkandl's work, he writes: "He wrongly blames Topinard, who considers the ridges as parts of the border of the nasal opening." This raises an interesting question as to the lines which bound the *fossa prænasalis*. That the front one is continuous with the border of the nasal opening is so evident, both in this case and in all the figures I can remember, that it is not conceivable that anyone ever questioned it. But the line bounding the fossa behind does not in this skull, nor so far as I can judge in those of the "Novara" expedition, come from the border of the nose. Concerning this it seems that Zuckerkandl is certainly right. Topinard, moreover, describes the fossa as bounded by the middle and anterior lines, though he himself teaches that the middle line is inconstant in the gutter. It is surely more natural to hold that the true fossa is bounded in fact, as well as in appearance, by the anterior line.

The distinction between the fossa and the gutter is essentially this: the fossa is a hollow distinctly separated by sharp lines both from the face and the floor of the nares; in the gutter-like formation, on the contrary, there is a passage from the nose to the face without definite beginning or end. It is impossible, therefore, to consider the fossa an exaggerated gutter. Nevertheless, there are ill-marked forms which partake of the characteristics of both, and are not quite easy to classify.

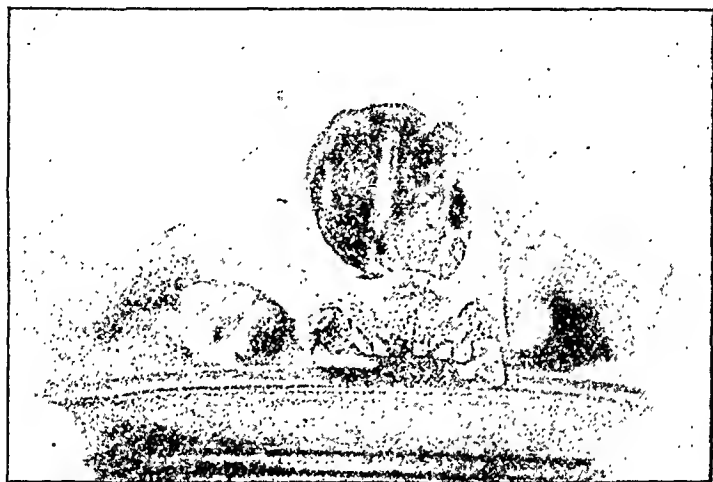
Professor Ranke is, I believe, the only authority who does not consider the fossa characteristic of a low type. It seems to occur most frequently in the Pacific islands—chiefly, apparently, in Java. I have found no account of it in Australians. I have seen at the Peabody Museum the skull of an Indian from the West Coast, in which there is a very deep true fossa on one side and none on the other.

The inferior border of the nasal opening is, as a rule, indistinct in mammals. A definite line of separation between nose and face is often wanting. The term "gutter" applies very well to the usual formation. It is to be noted that this gutter is in no way peculiar to apes, but common to the class of the mammalia. The lower border is sometimes tolerably sharp in apes and monkeys. The splitting of the outer border is sometimes seen very poorly marked in the gorilla. I have seen once a suggestion of a fossa. Decidedly the nearest approach to the true *fossa prænasalis* is to be found in the seals. Both the common *Phoca*

¹ Archiv. für Anthropologie, Band ix., 1876.

vitulina and the *P. pagophilus* (the harp seal) show it sometimes very clearly. Fig. 3 is from a photograph of the latter. It is a small fossa in the intermaxillary. The front boundary line is very characteristic. It arises from the lateral border of the opening of the nares, being at first the outer edge of the intermaxillary bone. It forms a tubercle above the outer incisor, and then turns inward, separating the anterior from the superior surface of the bone, and finally runs upward to the nasal spine. The shaded part of the bone in Fig. 3 is this anterior surface. The posterior line separates the fossa from the nares. Looked

FIG. 3.



at from above, the formation is very like a deep gutter; but if the skull be held opposite the eye, it is clear that there is a front surface above the incisors which slants somewhat backward. There is, therefore, a distinct anterior boundary of the fossa. This front surface which, of course, is an essential part of the formation, varies much among seals. It is sometimes hardly to be made out. It has just been described as slanting backward. It may do so to such a degree as to be almost horizontal. It often happens in the common seal that together with an almost horizontal position this surface becomes very small. It gives the impression that the teeth are inserted a little behind the front of the jaw. If such a specimen were seen alone, no one would suspect the presence of this anterior surface. A series of specimens, however, shows the correctness of the view I have taken.

The significance of the *fossa prænalis* is a very interesting and a very important question. The gutter might be called a reversion, but the fossa cannot. So far as I am aware, it is found clearly marked only among the seals, a highly specialized branch of the carnivora, and

among them it never reaches the development which it sometimes presents in man. To call it atavistic is, therefore, absurd. As the finest examples of it are found in the lower races, it is impossible to consider it a progressive modification. The rounding of the lower edge in the infant is perhaps akin to the gutter, but not to the fossa. Thus we have here an anomaly in man which is neither reversive nor progressive. For my part, I cannot look on the occurrence of a similar structure in the seal as of no significance, as accidental and meaningless—like, for instance, the superficial resemblance of an anencephalous monster to a frog. The attempt has been made to account for similarity of structure in widely separated forms, as shown in the paddles of the ichthyosaurus and of the whale, by similarity of external influences. It is plain that this will not do here. The occurrence of the *fossa prænasalis* in man and seal implies a relation between distant animals other than that of heredity. It must be due to a law which we can grasp but vaguely, resting on a common plan, and, to some extent, on common tendencies.

THE SIGNIFICANCE OF OCULAR SYMPTOMS IN INTRA-CRANIAL DISEASE.

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WHEN we bear in mind that the second, third, fourth, and sixth intracranial nerves are intended solely for the innervation and special function of the organ of vision, and study the vast expanse of cerebral tissue beneath which the optic nerves and their internal prolongations make their way with their bendings across structures of known value, and their dippings into tissues of recognized use, until at last their projection fibres, spreading into two great sheets of central nerve massings, occupy definite areas in the cerebral cortex, we see that the conditions, both the subjective and the objective, of this organ as indices of intracranial disturbance, when properly studied and carefully considered, are of great value; and still more, when we think of the dual relationship of this immense sensory-motor apparatus, with its almost innumerable and yet correlated subjective and objective physiological actions and pathological symptoms, which can be determined with such comparative ease and with such certainty, we can readily understand that more importance than at first sight might be vouchsafed is to be attached to its conditions and to its actions in the ordinary symptomat-

ology of intra-cranial lesion—in fact, that its conscientious study is a necessity for the proper clinical elucidation of the entire subject.

Passing inward from the most highly specialized peripheral organ of the system, the largest single bundle of special afferent nerves at last distributes its terminals over what is probably the largest portion of the cerebral cortex intended for any definite sensory use. Pursuing their outward course from definite parts of the brain-surface, the three efferent nerves, having hitherto been widely separate, are gathered into special bundles at or before their points of exit from the basilar substance of the cerebrum, and finally pass through the skull to be distributed to the muscular tissues intended for the internal and external motility of the organ. It is, then, in these tissues that we must seek for pathological change: it is by the apparent peripheral results of normal or faulty action of these structures that we should make research for position, for size, for area, and for character of neoplastic, inflammatory, or degenerative product.

Looking at the whole subject of cerebral localization in its broadest sense from what is probably the best point—viz., the clinical—the ophthalmologist should study the character of the entire series of ophthalmic symptoms, and carefully notice their exact nature; at the same time not forgetting to watch periodically for transient deviations of symptom-groupings, so that accurate notes of every ocular change, whether seemingly peculiar or not, can be made. Combined with this, the effects of all other visceral disturbances, and, further, the physiological workings and physical condition of the other sense-organs, must be carefully studied and taken into account; while search should be instituted for the full meaning of the now fairly understood higher mental actions in every instance. If this be done, and if all the obtained symptoms in as many seemingly similar cases as possible be made into single general groupings, much etiological information for the benefit of future study will be obtained. Moreover, the known effects of medical therapy and of surgical interference, with the results of scientifically applied experimentation upon living tissue, should be carefully considered; and whenever occasion affords, painstaking macroscopic and microscopic investigation of diseased tissue should be added. If all this be done, the ultimatum of diagnosis must be the result.

The province of the present paper is limited to the significance of the ocular findings. Possibly the wisest plan of discussing the subject from an ophthalmological standpoint would be to divide the special symptom-groupings into two kinds, the sensory and the motor, each of which expresses itself in two ways—the irritative and the degenerative.

Taking the sensory-irritation type first, we find, primarily, that as the broad expanse of the external periphery (the retina) and the large area of its internal prolongation (the occipital cortex) are almost identical,

being composed of definitely graded nerve-cell and nerve-fibre layers, each the termination of an individual second nerve-fibril, the irritation disturbance of each membrane, or retina as it were, manifests itself by uncalled-for sensory acts. Phosphenes, the frequent subjective sign of choroidal and retinal disease, are also seen as the usual accompaniments of cortex disturbance, as so often shown in megrim and præpileptic states—interrelated symptoms, each expressive of peripheral or centripetal irritation—symptoms which, were their position in the visual fields carefully studied, would probably indicate the situations of the points of greatest irritation. Again, sensory hyperæsthesias are almost daily seen, not only peripheral from too strong external stimuli acting directly upon over-irritated and inflamed retinal structures, as in the disturbed retinæ of ametropia and grave intra-ocular disease, but also both trunkal and centripetal, as shown by over-sensitiveness of many portions of the visual apparatus as expressed by the numerous subjective factors when the peripheral termination (the eye) is exposed to ordinary stimuli. Here not only are the mere assertions of the subjects of value, but the more graphic, though of course similar, studies of the positions of the projections in the visual fields serve as important indices of such conditions. This will be understood when it is remembered that the very fact of semi-decussation of the optic nerve-fibrils at the chiasm, and their uninterrupted after-passage to the cerebral cortex, show almost with certainty the position of the points of greatest irritation upon the visual apparatus. A single optic nerve irritation symptom is, clinically, always expressed monocularly, and can be made to appear before the fellow-eye through related commissural fibres only by steady persistence or intense severity of the disturbance: a chiasm irritation shows its projection-symptom in one or both of the visual fields at a point exactly corresponding to the portion of the cerebral cortex excited by the related parts of the intermingled nerves which are irritated; a tract irritation, on the other hand, should it embrace the entire transverse diameter of the nerve-trunk, is decidedly hemiopic in character; while back of this, owing to the gradual broadening of the sensory fibres, the extent of the visual fields in which the visible expression of the same-sized irritant appears becomes lessened as the point of irritation is carried backward.

So-called "choked disc" and hemorrhagic extravasation into the retinal elements, both grave objective signs, indicate but too frequently the presence of fast-increasing neoplastic formation or other intra-cranial growth. Without entering into any theories as to their causation (theories that must remain *sub judice* until we shall be in possession of a long series of carefully made clinical histories in association with post-mortem examination of involved tissues by expert microscopists, combined with laboratory experimentation), all that we can say is that they

either show an active increase in the intra-cranial contents, or indicate a further progression of inflammatory material into the tissues of the nerve itself. They thus manifest themselves as among the most prominent and useful objective symptoms of rapid intra-cranial irritation. Appearing as they do at any stage of intra-cranial disorder, and often without any appreciable defect of vision, search should be made for them in every suspected case. Not that they locate the position of the disease or give any idea of its nature; not that an optic neuritis can be depended upon as a localizing symptom; but they both specify themselves in many instances as peripheral expressions of rapid mechanical interference and of active increase of some intra-cranial disturbance. At times they even may, by their inequality of degree and amount, offer at least some hope of answer to the question as to which hemisphere is the more greatly attacked. In cases of tumor, as the writer has upon another occasion said: "The nearer the mass is to the large fluid cavities and their inter-communications, the more certain are we to have peripheral expressions of mechanical interference, while the less removed the neoplasm is from the associated intra-cranial tissues of the second nerve and its internal prolongations, the more certainly must we expect to have results of pressure and even destructive changes: thus, roughly, cerebellar, deeply seated cerebral, and basilar growths seem the most prone to produce optic neuritis."

Should the great majority of cases of sudden choking be carefully studied, it will be noticed that there are initial subjective symptoms of irritation, pressure, and loss of sight, which gradually cease until often there is a gain of color vision sufficiently high to include many reds and greens. Unfortunately, however, this standard is surely though slowly lowered by subsequent nerve-tissue shrinkage and by nerve-fibril degeneration, until at last all signs of irritation disappear, and the nerve tissues are left to shrivel partially or almost wholly die.

Naturally the degenerative varieties of the sensory type of changes follow next. These are both multitudinous and highly symptomatic. Much more reliance has been placed upon this category of symptoms than upon any other. Happily, as already pointed out, the sensory portion of the human ocular apparatus is so subdivided at the so-called chiasm, and the tracts themselves all the way back to their termination in the external geniculate bodies, the optic thalami, and the anterior corpora quadrigemina, with their commissural branches into the cortex of the occipital convolutions, are so fixed and constant in their relations to the two eyes from which they come, that the utmost reliance can be placed upon the significance of many of the ocular symptoms found, which, when associated with other related sensory findings, give most important indications, not only as to the presence of intra-cranial disturbance, but also as to its actual position.

The methods of obtaining central distant and near vision for form and color, the areas and positions of the visual fields, the relative degrees of saturation of color in the retained portions, and the presence and relative situations of negative and positive scotomata—all of which should be studied in every case possible—need no comment here: These results are among the most valuable symptom-groupings that we possess. They not only show the relative amounts of nerve-degeneration on the two sides; but actually assert to a greater or less degree the absolute points of greatest tissue change.

Not only does the large specialized bundle of second-nerve fibres, with its innumerable intra-cranial connections and broadly spread terminals, give its peculiar subjective expressions of physiological loss to the category of symptoms, but advantage also may be taken of the percentage of sensation present in the ocular superficies. Thus the comparative amounts of anæsthesia and analgesia in the conjunctiva and lids, and the relative degrees of surface-temperature in similar positions, should be studied in all suspicious cases.

As indicative of the position of intra-cranial disturbance, next follows one of the most important and most unfailing ocular signs ever presented to us. True, it is not wholly a symptom of sensory degeneration, but, as it is expressive in most instances of functional loss in the sensory portion of a sensory-motor arc, the so-called Wernicke sign—more properly termed the hemianopic pupillary inaction sign—should have place here. Showing itself by a want of iris-muscle motion in a position generally corresponding to an area of want of sensory conduction in the optic tract, it serves in many instances as a motor expression of failure of sensation. Knowing as we do, from experiment and pathology, the comparative anatomical relationships of the two structures, and inferring from this standpoint the peculiarities of their physiological workings, any fault or break in the combined mechanism exhibits itself by a definite want of response in transmission of nerve-impulse, thus making it probably the best of all the more certain ocular expressions. Carefully searched for and repeatedly studied until the slight variations of answer at times met with can safely be cast aside, it becomes one of the easiest, most graphic, and most determinate symptoms that we have.

Back of this sensory-motor arc—beyond this portion of the second-nerve prolongation—the visual motor expression of disturbance is lost. No matter how much loss of vision there may be, the arc remains intact, and the movements of the irides to light-stimulus thrown upon the retinae, though often sluggish, are as complete as if the visual apparatus were perfect.

If the sensory disturbance is situated in front of the chiasm, merely the hemianopic character of the want of iris response disappears, though the movements of the diaphragm, just as before, are in exact relation-

ship and in due proportion to the positions and degrees of the changes in the second nerve.

The objective appearance of the peripheral ending of the living nerve, with its small vascular circle and its surrounding retinal area as revealed by the ophthalmoscope, next demands attention. Here the effects of an optic neuritis, or of a secondary optic nerve atrophy with or without retinal change, may often be seen. The two varieties of picture, as shown in a measure by the degenerate appearance of the nerve-head, its apparent bloodlessness, the contraction of the retinal vessels, and the few remnants of past hemorrhagic extravasation, can hardly be mistaken; while the irregularity of the shrunken disc surface, the slight blurring of the borders, and the opacities along the retinal lymph-channels when "choked disc" has been present, can seldom be misconstrued. Upon account of their almost certain appearance during some period in the course of an intra-cranial neoplasm, they form one of the most important objective symptoms in this affection.

Leaving the sensory groupings, we reach the motor. Taking the objective findings first, we shall soon notice that they are the ones which are most completely within our grasp: here much of this character of the symptomatology becomes visible without resort to artificial means: it is to a greater extent noticeable to naked-eye observation, and thus calls for less dependence upon the assertions of the patient. If careful study be made of the ordinary methods of examination necessary for the ascertainment of the symptoms, and if the various and frequent modifications of technique, so desirable in most instances, be taken into consideration, the procedure for the study of the objective groupings will readily resolve itself into one of the easiest and most comprehensive that can be offered to the ophthalmic clinician. Far different is it with the subjective symptoms. Here there is so much at variance, there are so many details of structure and peculiarities of action to remember, there is so much that is inter-related and hidden, that the most accurate knowledge of the subject, with the most tedious and at times apparently most contradictory courses of examination, are necessary before any useful data can be obtained. Difficult as it is to understand the average degree and relative proportion of muscle innervation so requisite for monocular balance and binocular adjustment; hard, for the less well informed, to comprehend the actions and peculiarities of correcting prismatic forms; and tedious, in most instances, to study the amounts of combined muscle action necessary to give what is known as proper equilibrium and extreme of normal working power in any certain direction—the various plans, though aided by the most ingenious and useful mechanical contrivances, are not only perplexing to the beginner, but often present insurmountable obstacles to even the best-equipped and most practised ophthalmologist.

Proceeding in the same manner as with the sensory symptoms, we will first consider the irritation types. Both clonic spasm of the ciliary muscle of probable central origin, such as is possibly seen in some cases of chorea, and tonic spasm of the same fibres, such as has been described as appearing during the cyanotic stage of an epileptic attack, are curious and interesting. These observations, if correct—which can be decided only by proper generalization—may prove of the utmost value. In the former, the degree and duration of alteration of the muscle-tone and its irregularly repeated contractions can be determined by the retinoscope and the test-lenses; whilst the latter, which, by reason of want of frequent opportunity to the advanced ophthalmologist for study and the increased difficulty of examination, is so rarely encountered, can be made evident by the ophthalmoscope.

Temporary spasm, not only of the iris and of the ciliary muscles, but also of the extra-ocular series, may at times assert itself. Again, involuntary spasmodic contractions of certain physiologically related muscle-groupings may take place. Prominent among the latter are those which in association with contrary and similar rotations of the head and neck accompany the general convulsive seizures so often seen in cases of focal epilepsy. Here the character of the uncontrolled motions and their relative directions of movement offer important objective signs as to the probable position of the intra-cranial site of irritation—a disturbance which in this class is “more apt to be caused by lesions in the motor zones and in the centres which are devoted to the action of the involved group or groups of muscles.” Even more, the rare cases of clonic spasm not only involving the intra-ocular and extra-ocular muscles, but also at times combined in greater or less degree with similar movements in the muscles of the ocular appendages, as seen in some cases of nuclear disease, serve as useful indices in differential diagnosis. The peculiar recurrent spasm of the orbicularis, and the less well understood and more complicated motor changes reported from time to time, should all be taken into consideration and noted whenever found.

Passing to the degenerative types of objective symptoms, we find them somewhat easier to study. One cannot fail to notice how plainly visible are the degrees of tonicity and the amounts of movement of the muscular tissues of the irides. Graphic in the extreme, recognizable in the majority of instances by the merest novice, and frequently well obtained under the most difficult circumstances, these special groupings become more valuable guides for the detection of related intra-cranial disturbance than their associated irritative motor expressions of disease. Excluding the so-called Argyll-Robertson pupil and the many and bizarre pupillary changes found in general paralysis of the insane, the muscle tone and movement of this portion of the visual apparatus are not merely indicative of fault in sensory channels, but become of peculiar

value in the determination of trunkal and nuclear disturbance situated in the connected and related intra-cranial regions. So, too, with the extra-ocular groupings: breaks in muscle-motion during definitely associated physiological acts, apparent failure of expression in supposed monocular and binocular response of single and combined motor impulses, and even absolute negation of all response to any form of stimulus, are here found. Varying from the slightest paresis to the most complete paralysis, and appearing in sequence that should be carefully considered from the very first indication of functional loss, they present themselves, in combination with the other symptoms, for careful and repeated study. Though difficult of comprehension in the great majority of cases, and yet easy to make plain to naked-eye inspection in many instances, they should always be sought for and carefully studied. If this be done, the greatest possible value can be attached to them as indicative of central disease.

With proper and extended study of these four series of symptoms, which, as we now can understand, are expressive of both sensory and motor changes in an apparatus that extends throughout so vast an intra-cranial area: and with careful reasoning and accurate noting of the many and varied changes that must constantly arise in the numerous combinations of their associated conditions and actions, much may be expected. In conclusion, we can broadly assert that when any part of this special sensory channel is irritated or inflamed, there may be hyper-æsthesia, as evidenced by symptoms of increase of functional activity such as phosphenes, etc., associated at times with coarse objective changes in the fundus of the eye; but if it be lowered in vitality by any cause whatever, anæsthesia will be present, as shown by decrease of physiological action, such as dimming and actual loss of macular and circum-macular vision, which frequently may be connected with visible degenerative lesions in the ocular background. If there is motor involvement, both clonic and tonic spasm show themselves as the results of irritation, etc., while paresis and paralysis announce themselves if degeneration exists.

As the writer has once before had occasion to say: "Each ocular symptom, however, in itself, is not etiologically self-answerable. Careful study must be made of all the conditions, so that by the process of exclusion adequate data can be obtained upon which to base answers as to the character, the type, and the situation of the supposed intra-cranial lesion."

Here instruments of ocular precision, in combination with the tact of an acute observer and the ingenuity of close questioning, will frequently unravel the many ocular threads of query and help to give practical answer as to the position of intra-cranial lesion.

REVIEWS.

REGIONAL ANATOMY IN ITS RELATION TO MEDICINE AND SURGERY. By GEORGE MCCLELLAN, M.D., Lecturer on Descriptive and Regional Anatomy at the Pennsylvania School of Anatomy, etc. Illustrated from photographs taken by the Author, of his own dissections, expressly designed and prepared for this work, and colored by him after nature. In two volumes. Vol. I. Philadelphia: J. B. Lippincott Company, 1891.

THE appearance of a new and comprehensive treatise on anatomy in the English language is an important event, especially when the author is well known as a distinguished and successful teacher, and the book itself is the fruit of great labor and expense. The book itself is a large and handsome one. The type is large and very legible, the lines far apart, the margins broad, and the paper thick. The fine colored plates are on separate pages. When such a book is brought out we must suppose that the author believes he has something important to say; that either new matters are to be presented, or new methods of presentation are to be used. We must look, first of all, for the author's intent; criticism then must deal with the worth of the purpose itself, and with the degree of success which the author has attained.

Dr. McClellan's purpose is to consider all the parts together, instead of the different systems successively, and to supplement his descriptions by colored plates prepared from photographs. The author plainly attaches great importance to these illustrations, which, in fact, are the characteristic feature of the book. His argument, as given in the preface, is essentially this: Anatomy is best learned from the "subject;" but owing to the difficulty of having enough material, and of bringing the students near enough to it in the lecture-room, there is need of something else. "Extempore drawings," says the author, "are of great value in awakening and retaining the interest of students, whose memories are often overtaken, and have an advantage over the most carefully prepared diagrams, models, or preparations; but there cannot be any means of illustration equal to the real thing in teaching; and the best substitute is that which aims at producing the most realistic impressions. Such illustrations have been attempted in the plates of the present work." Further on he says: "It should be borne in mind, however, that no true picture of the actual subject will have the distinct demarcation and clearness of a diagram any more than the representation of a natural landscape indicates mountains, rivers, and boundary lines with the exactness of a map. Diagrams will, therefore, always be useful to the student in showing him what he ought to see, but such illustrations as are here attempted should be valuable in enabling him to recognize things as they actually are. These representations are intended to meet the need both of the beginner in dissecting, who is appalled by the want of

correspondence between that which he actually sees and that which he has been led to expect by diagrams or description, and of those whose time is too gravely occupied by the pressure of professional duties to warrant their dissecting for themselves." We make no apology for the length of these quotations, for here we have the root of the matter. Is the author's idea of the kind of illustration required the correct one? Do the plates in the book come as near to the ideal as is reasonably to be expected? With all deference to the text, which is in the main very good, we have no hesitation in saying that this book will stand or fall, according as the public answers these two questions.

To give our opinion on the second question first, we must say that, with some exceptions which leave much to be desired, the plates come quite as near the proposed standard as could be hoped for. Of some of them it is hard to speak too highly. They are beautiful, and they are true. One feels that he sees the dissection as it was. The want of outline, which rather oppresses us, is a necessary result of the method. We have found, moreover, that on looking at one of these plates for a considerable time, what at first is obscure becomes clear, as is the case with certain pictures of the impressionist school. There are several transverse sections which, to our mind, would have been better had they been made through frozen bodies, but they are, for the most part, very good as they are. There are some plates, however, which can have no share of this praise. The worst are those of the convolutions of the brain. After Dalton's achievements they cut but a sorry figure. What is worse is that they are quite inadequate to their purpose. It is inconceivable that a student could learn the convolutions on them.

Finding, then, that in spite of some shortcomings the plates as a whole are good, we come to the fundamental question whether this method is sufficient, especially for students. We regret to differ from the author in believing that it does not rest on a correct principle. It is not enough to have a picture that reproduces perfectly, were it possible, the image thrown on the living retina. For teaching purposes we need more. We want a representation of the concept in the mind of the teacher which has been acquired by more than the sense of sight. We want to have certain points emphasized. We would have certain facts, so to speak, put in italics in the plate. In studying these plates, we sometimes feel precisely as we have felt in looking at an operation or a dissection from a distance. We wish our eyes were a little sharper, or the light a little better, or that we could draw the tissues a little more asunder. The same feeling is instinctive with the student even close to a dissection. He is not content to look at it. He longs to touch it; to put his fingers into it. In short, he wants to bring another sense into play to help out his sight. Moreover, what we learn from a picture depends largely on our knowledge of the subject-matter. The whole story, if you please, is in the picture, but it gives one message to the expert, and a very different one to the beginner. The latter needs some guidance beyond the very complete set of references with which these plates are provided. For these reasons we regret very much that the author does not give a series of simple diagrams in the text, if he could not consent to a more diagrammatic handling in the plates themselves.

The volume before us treats of the head, the thorax (excepting those parts of it which may be classed with the back), and the arm. Dr. McClellan's method is that of the practical anatomist. We feel

that we are following a dissector *par excellence*. He describes truly what the scalpel reveals. Where anatomy is to be shown by dissection our author is at his best, and his best is very good. His surface anatomy also is excellent. His methods are largely those of the older English school. He does not strike us as deeply read in the works, nor familiar with the methods of the modern German anatomists, whose influence is spreading in both England and America. We follow his knife with confidence; but we are less satisfied when he treats of parts or regions which are not to be studied by dissection. We may take, as an instance, the mouth and pharynx. The soft palate is said to consist of a flap of muscles just under the mucous membrane. Nothing is said of the glandular layers nor of the thickness of the soft palate. This should have been mentioned, for the student who has studied merely a dissection of the palatine muscles gets the idea of a thin fold. It is true that a median section of the palate is shown in a plate in which its thickness is evident to whoever may think of it. We are told that the uvula varies in length, and gives rise to a cough if elongated; but we are not told how nearly it reaches the top of the epiglottis under normal conditions. We nowhere find a statement that the hind third of the dorsum of the tongue is practically vertical, forming the front of the pharynx. This is fairly well shown in Plate XII., but the student's attention is not called to it. There is no mention whatever of the important median third tonsil. We find only: "In the neighborhood of the Eustachian tubes there are aggregations of these mucous glands and lymphatic follicles, constituting the so-called pharyngeal tonsils." Almost immediately after this comes the sentence: "The mucous membrane on each side of the upper part of the pharynx is puckered into a pouch called the *pharyngeal recess*." Now the fossa of Rosenmüller, which we presume is referred to, is not properly the result of a puckering, but is the reverse of the projection of the cartilage of the Eustachian tube.

The author's descriptions of what he sees are in good, simple language, easy to understand, and singularly free from the conventionality and pedantry which have such a cramping influence on anatomical diction. Dr. McClellan is, moreover, independent in his nomenclature. Sometimes, perhaps, too much so. It seems to us a pity to restrict the term "arch of the aorta" to what is usually described as its transverse portion.

The following is a specimen of many practical and more or less original suggestions scattered throughout the work: "The presence of this *extra-pleural fascia* at the root of the neck, with its possible modifications consequent upon any inflammatory infiltrations, is worthy of the consideration of the physician, who may be confused by the adventitious sounds produced by it upon auscultation, in the same manner as the surgeon finds it often difficult to distinguish between true and false crepitus in injuries about joints."

The want of a thoroughly modern and comprehensive work in English on topographical anatomy has long been felt. We have tried to make clear the reasons for which we feel that the want has not yet been fully met. Nevertheless, though this book is not up to our ideal, we know of no work on the subject in English worthy to be its rival.

T. D.

EINE NEUE BEHANDLUNGSMETHODE DER TUBERCULOSE, BESONDERS DEN CHIRURGISCHEN TUBERCULOSEN. Von PROF. DR. MAX SCHÜLLER. Large 8vo, pp. x., 84. Wiesbaden: J. F. Bergmann, 1891.

A NEW METHOD FOR THE TREATMENT OF TUBERCULOSIS.

ALREADY widely and well known for his practical and literary work in connection with diseases and deformities of the bones, Prof. Schüller has gathered together in the book before us the results of his experience in the treatment of tuberculous disease of the bones, joints, glands, and skin, partly to call attention to the importance of joining systemic with surgical treatment in such cases, but especially to enforce the impression which he has received from the successful treatment of a few cases of tuberculosis of the lungs by the internal administration of guaiacol. The great interest in the subject of phthisis which blazed up under the influence of the announcements of Koch last year has prompted Schüller to come forward, apparently to secure credit for the persistency with which he has urged the identity of local and general tuberculosis, and for the introduction of guaiacol as a remedy for both. He states in a foot-note to page 3 that guaiacol was first used as a medicament by him. Convinced of its great utility, he now recommends it strongly for general use, and urges that it is best given in the liquid form, and for a long period at a time—a year or more. In support of this recommendation he cites a large number of cases of local, or external, tuberculosis treated with or without operation, many of them having been treated also with guaiacol internally administered. He refers besides to a few cases, and gives the details of one, in which he treated phthisis with guaiacol. In all, the results were very favorable. The especial advantages he claims for guaiacol are, that it is cheap, that it is well borne by patients, and that it is efficient.

Schüller's enthusiasm has been shared by a few other writers, although there has been no general agreement that guaiacol is a remedy of paramount value in the treatment of tuberculosis of any sort. The first person to publicly recommend its employment instead of creasote—so far as we know—was Sahli, of Berne, who, in the *Correspondenzblatt für Schweizer Aerzte*, No. 20, 1877, recommended the substitution of guaiacol for creasote, on the assumption that guaiacol and cresol are the two ingredients of creasote, and that the former is less likely to be the subject of substitution by coal-oil products. Guaiacol is obtained by destructive distillation of guaiac resin, or from beechwood tar (or other tars). It is a clear, colorless, oily fluid, with a strong odor of creasote. It becomes brown when exposed to the air or light. It is easier to take than creasote, and may be administered in water or spirits, or in capsules. In 1888 Nobili reported, in the *Gazetta degli Ospitali*, of Milan, admirable results from the administration of guaiacol, and found it superior to creasote. In 1889, Bourget recommended it strongly in the form of a wine, or with cod-liver oil. About the same time, Fawitzki, in *Pratch*, praised it in the strongest terms, calling attention especially to a point (noticed also by Schüller in his book), namely, the marked anti-catarrhal influence of the drug. About a year ago, Picot, of Bordeaux, reported to the Académie de Médecine, of Paris, twenty-five cases of phthisis treated with hypodermatic injections of a mixture of guaiacol and iodoform in

equal parts of olive oil and liquid vaseline, and stated that the results he had obtained were better than by any other mode of treatment which he had employed in thirteen years' experience as a teacher.

So far as we know, the use of guaiacol has not been sufficiently general to warrant a final opinion as to its true place in the treatment of tuberculosis; but a remedy which has given such good results in the hands of widely separated clinicians, and which has, to a certain extent, back of it all the good results obtained by the administration of creasote, deserves careful consideration and faithful trial. So much must be conceded in estimating the earnestness with which Schüller urges it upon the attention of the profession. Its value in the management of his surgical cases may be differently appreciated by surgeons who consider the thorough local treatment of his patients; but no one can doubt that his combination of general with local treatment is sensible and worthy of imitation.

Having said so much in regard to the matter of Schüller's book, it is pleasant to be able to add that its literary style is excellent, and that it is as interesting as it is suggestive.

C. W. D.

LES FONCTIONS DU CERVEAU: DOCTRINES DE L'ÉCOLE DE STRASBOURG, ET DOCTRINES DE L'ÉCOLE ITALIENNE. Par JULES SOURY, de la Bibliothèque Nationale, etc. Paris, 1891.

THE FUNCTIONS OF THE BRAIN: THE TEACHINGS OF THE STRASBOURG AND THE ITALIAN SCHOOLS. By JULES SOURY, of the National Library.

THE object of this book, written evidently by a layman, is to present the results of experiments upon the brain by some of the foremost physiologists of the day. The author appears to have formed the design of presenting a history of the contemporary physiological psychology which has advanced so conspicuously to the front. This admirable critical history presents a synthesis of the works which have appeared in Europe upon cerebral localization since the discovery of Fritsch and Hitzig in 1870. Most of these works have been analyzed and expounded by M. Soury at the École des Hautes-Études. It is a very notable fact that since 1881, as initiated by M. Paul Bert, then Minister of Public Instruction, the history of the doctrines of the new physiological psychology has had a place in the higher education of France. What an example for some of the educators in our great universities in America, who still follow the methods and reap the fruits of the schoolmen! It is a cause for pride in all medical men that the results of the work now being done in their own profession are beginning to be used by educators and philosophers as the foundation for a new and scientific psychology.

The great opponent of the doctrine of cerebral localization has been Frederick Goltz. M. Soury's critical review, in the first section of his book, of Goltz's method, experiments, and inductions is clear, concise, and impartial. For those especially who prefer a lucid French style to the involved and cumbersome language of the original memoirs, the book is valuable and trustworthy. While not a translation, it is a

statement; and this can suffice to a busy man surrounded by an over-teeming literature in four languages. Very hostile to all cerebral localization, without denying its possibility in principle, Goltz has been its most redoubtable and best-armed adversary. This is why M. Soury, as he writes in his conclusion, has chosen Goltz to inaugurate this history. Although he defends himself from being a man of party, Goltz has been the chief of a school. If his interpretations of his own experiments had prevailed, the doctrine of the heterogeneity of the cortical functions, as supported by such men as Fritsch, Hitzig, Ferrier, Munk, Luciani, Exner, and Charcot, would have received, at least for a time, a sensible check. But, says M. Soury, not only have these interpretations not prevailed, but his experiments have furnished against Goltz himself decisive proofs in favor of cerebral localization. So Goltz, it appears, has been forced by his own experiments to concede that the anterior lobes and posterior lobes are functionally heterogeneous, which is practically conceding everything by a man whose physiological reasoning is often involved, and whose experimental method of washing away the cortex with a stream of water is crude and rough in the extreme.

The study of the disorders of general sensation caused by lesions of the cortex has an interest at present even greater than that which attaches to the study of those of motion. In his third chapter on Goltz the author states the position of most experimenters and of many prominent clinicians. It is notable that the consensus of opinion on the Continent is against the position of Ferrier, that sensation is not localized in the motor zone. Thus Fritsch and Hitzig believe that the muscular sense is altered by lesions in this zone; Schiff, that tactile sensibility is plainly abolished; and Munk, that not only the sense of touch, but all other modes of general sensation are lost. But Charcot points out that these alterations are not constant, as has been pointed out unmistakably also by a number of clinicians in America. As sensation is doubtless the foundation of intelligence, its study by the physiologist will have an important place in the new psychology.

M. Soury's examination of the Italian school of Tamburini, Luciani, and Seppilli, is still more minute than that devoted to the Strasbourg professor. Among the conclusions of this school are the following: The diverse functions of the cortex, besides each having its own proper centre, possess a common territory [a sort of common *sensorium* and *motorium* (?)] where the centres "dovetail" and pass insensibly one into the other. It follows that the diverse functions of the brain are so intimately related among themselves that it is impossible to injure one without injuring others. The cortex is the seat of the higher psychical acts—perception, ideation, etc. Parts of the same centre can supply lost parts. The relations of sight, hearing, and smell are bilateral; of the sensory-motor sphere unilateral. The morphological variation in the nerve elements of the cortex does not determine their functions; it is in the anatomical relations, rather than in the form of the cell, that the difference lies. In the different zones of the cortex the two types of cells—sensory and motor—are united and mingled in diverse proportions, consequently the sensory and motor functions, far from being distinct, coincide and have a common anatomical seat. Special functions depend, not upon special differences in the nerve elements, but upon the nature of the sensations from the peripheral organs. Relations between cells and groups of cells, central or peripheral, are not isolated and direct,

but by means of a vast network of fibres—the ultimate ramifications of the axis-cylinders of the two kinds of cells, sensory and motor. Thermic changes occur in all brain activity. Intelligence has its chemical, thermic, and mechanical equivalents.

Many of these conclusions are suggestive, some of them are true, some of them contradict the others, and some are contradicted by experiment and clinical observation. The work of the Italian school is somewhat eclectic, but its value nevertheless is great. A very important synopsis of it is given in M. Soury's book.

J. H. L.

HANDBOOK OF MATERIA MEDICA, PHARMACY, AND THERAPEUTICS. By SAMUEL O. L. POTTER, A.M., M.D. (Jefferson), M.R.C.P. (London). Third Edition. Pp. xii., 767. 1891.

A HANDBOOK which has passed to its third edition in less than five years has certainly found its place, and has well filled it. The author's manuals in the "Quiz Compend" series, so popular with the undergraduate student, have made his name a sufficient guarantee that the advanced student and junior practitioner would find in the present volume a faithful companion. It is with this view of the author's purpose that this book has been carefully read.

After a brief introduction we pass to the classification of remedies, which occupies thirty-two pages. Although no classification could be produced which would meet the approval of many, yet this one seems to be well adapted for the purpose for which it was constructed, in that it gives the student a general idea of the prominent effects of the remedies that he is to use. Here we miss many remedies that we find in contemporaneous literature, but none that have been before the profession for a sufficiently long time to be of assured value. We consider this section, placed, as it is, at the commencement of the work, to be worthy of especial study on the part of the student, that he may now group together drugs which possess common qualities, reserving for future study the minor differences and modifications of their use.

Part I., *Materia Medica and Therapeutics*, fills about three hundred and fifty pages; the subjects being arranged in alphabetical order. It may seem to savor of the dispensatory to find ereolin touch elbow with crocus, while cubeba, euprum, and curare follow in close order, but after the chapter on classification has been mastered it is not a disadvantage. After each drug has been described, its preparations, official (which the author prefers to officinal) and unofficial, with dose appended, are followed by a brief statement of its physiological action. Its antagonists and incompatibles are clearly stated. Then comes a fairly full presentation of the therapeutics. As this work is necessarily a compilation, no claim to originality is made, but the weeding out of unessential details of description will certainly meet the approval of those who use this book. In therapeutics the author has very skilfully steered his course between the pessimism that marks a system of therapeutics based solely on the results given by experiments and observations in the chemical and physiological laboratories, and the optimism of hasty empirical generalizations upon meagre clinical data, and upon this we consider that

the greatest claim can be made, that this book is a safe one for the junior practitioner.

Part II., Pharmacy and Prescription-writing, comprises a large variety of information in the seventy pages devoted to this subject. The operations of pharmacy are fully described, as well as the different preparations. The subject of incompatibility is thoroughly written. Prescription writing, the subject of many small books, has received careful attention.

Part III., Special Therapeutics, occupies two hundred and twenty pages. In the preparation of this division the works of Aitkin, Agnew, Bartholow, Brunton, Carter, Clarke, Druitt, Emmet, Ellis, Fothergill, Goodell, Hamilton, Leishman, Meigs and Pepper, Niemeyer, Phillips, Piffard, Ringer, Rosenthal, Stillé, Sturgis, Tanner, Troussseau and Pidoux, Tait, H. C. Wood, and Waring, have been freely laid under contribution. While it may be objected that this division resembles that abomination of most text-books on therapeutics—a clinical index—yet a careful reading will modify this opinion. The purpose of each remedy, given under the heading of a disease, is briefly yet clearly stated, and the suggestions are so abundant that we are inclined to believe that the student who relies upon the name of the disease and not upon the pathological conditions underlying it, and the particular conditions which present themselves, will find there but little consolation. The references are so full and the indications so varied, that we believe an intelligent use of these pages will compel the practitioner to more accurate prescribing. The remedies mentioned are not those that might possibly be used with benefit in these conditions, but are those that our best specialists find of value under precisely these circumstances. Following each subject we find a few prescriptions, most of which bear evidence that they have been selected by a practitioner of experience, although some appear to suggest poly-pharmacy.

In the appendix of nearly forty pages, we find a large amount of important information, list of Latin words and phrases, hypodermic formulæ, formulæ of patent medicines, and the treatment of poisoning. Quite a considerable quantity of matter is introduced, however, which seems hardly to have a bearing upon the subject of the book. The reviewer would instance the tables of differential diagnosis, obstetrical memoranda, clinical examination of the urine, and ethics. It is well for a physician to know where he may find this information when he may desire to refresh his memory, but he would not ordinarily seek for it in a book of this character. Nearly thirty pages are occupied with a most excellent index, which greatly enhances the value of a book, used as this will be, for study and review.

The author, then, has fully attained the purpose which he set before him at the commencement. He has written a safe book for advanced students and junior practitioners. When the fundamental principles have been mastered, the progressive practitioner will turn to monographs and more elaborate treatises to complete his knowledge. R. W. W.

A MANUAL OF PRACTICAL OBSTETRICS. By EDWARD P. DAVIS, A.M., M.D., Clinical Lecturer on Obstetrics in the Jefferson Medical College; Professor of Obstetrics and Diseases of Children in the Philadelphia Polyclinic; Visiting Obstetrician to the Philadelphia Hospital; Physician to the Children's Department of the Howard Hospital; Fellow of the American Gynecological Society. With 140 illustrations, two of which are colored. Pp. 298. Philadelphia: P. Blakiston, Son & Co., 1891.

It may be stated as a matter practically true of modern obstetrics, that, given a pelvis conforming to the average normal and free from adventitious obstructions, delivery may be had with absolute safety to the mother and probable safety to the child, the position and presentation having no bearing upon the general result. To this high aim Dr. Davis's manual clearly points by the placing before the student in a concise form every obstetrical principle that recent scientific advance has shown to be conducive to this end. Instruments of precision in examination and procedure, and antisepsis reduced to a method, distinguish the art to-day from that of the dark age of obstetrics less than a generation past. In this field Dr. Davis's manual exists without a rival. Another departure from the usual and time-honored form is the omission of the preliminary chapter on pelvic and genital anatomy, and taking up the matter proper to obstetrics in the first opening. It would be well for the formal treatise to follow this example.

The Ovum, the Embryo, and the Fœtus are disposed of in the first three chapters, richly illustrated. The Mother is disposed of in two more, and then matter proper to the obstetrical art and management is taken up. In the directions as to the management of the perineum the "Vienna method," so called, is recommended. It is one of the peculiar phases of medical experience that the authors so generally give directions as to the management of the head in passing over the perineum, while no directions are given concerning the passage of the shoulders, and yet there can be no trace of doubt, in one man's experience at least, that the latter are the prime factors in serious perineal rents. This comment is made to enhance the fact that our author is as careful in his technique of shoulder as in head delivery. Under certain circumstances episiotomy is advised, and a knife devised by the author is figured. Those who make primary repair of the perineum, and place three or four sutures from the outer surfaces, would do well to get the volume and read the operation as described by Dr. Davis. It would be far more humane to the lying-in woman to leave the parts untouched after rupture than to purse-string the parts together by passing the external sutures as is commonly done. The results obtained by non-interference are equally as good as in those so-called primary operations.

Abnormal labors, the head presenting, occupy three well-written chapters; that on the forceps, for its brevity and clearness, being specially worthy. The axis-traction forceps are given full illustration. A description of breech and transverse positions, with the necessary obstetrical manœuvres, is given with a wealth of illustration not more than equalled in the most elaborate treatises. In deformity and obstruction of the birth-canal the author is opposed to Porro's operation, but is not con-

servative concerning the Cæsarcan section. Abortion has a brief chapter, and induced labor is given the importance it demands. It is doubtful if physicians are generally convinced of the importance of early induced labor in cases of pelvic distortion or obstruction. With our modern appliances in the care of the prematurely born, mother and child may often both be saved, when, if allowed to reach the full term of gestation, one or the other may possibly be sacrificed. In eclampsia the author adheres to the toxæmic theory as to cause, and that a ptomaine is the probable direct agent.

The brief chapter upon the artificial feeding of infants is admirable. The author, having done valuable original work in the vexed question of infant foods and feeding, speaks with the authority of the master. It is a sad thing that the little that experiment and careful study has shown us to be facts about infant food is not more generally and clearly known. We hope that Dr. Davis's manual will come within the reach of all, as it will do much toward diffusing this necessary information. In the treatment of ectopic pregnancy, Dr. Davis belongs to the surgical school—a natural outcome of the extravagant claims of the electrician. Another reason may be that in a practical manual for the student, positive instead of doubtful methods must be taught, and in this sense the surgical school holds a proper position. A chapter with detailed drawings is given upon lacerations of the perineum and pelvic floor, with very practical directions. In the chapter upon puerperal sepsis, the author is very practical and common-sense. The recent protests to be noticed in the journals against the vaginal and intra-uterine douche, when indicated by foul lochia, are not noticed. The extreme views of what one may venture to term the Philadelphia school in the surgery of the abdomen in cases of perimetritis are silently passed over, and as the general practitioner is able to acquire all the education upon this subject that is good for him from the journals, it will not be missed in a manual. A useful appendix of formulæ, followed by a full index, closes the volume.

This is an age of graphic art, and in no recent book designed for technical instruction is the tendency of the period more thoroughly utilized. The illustrations are in a very happy manner made a part of the text, and assist in brevity instead of adding to the mass of printed matter, as is often the case. We used to have illustrations in obstetrical works conventionalized like the flowers in wall-papers, but this age has passed, and now a cut must realize the facts as nearly as black and white can depict them, and the selected cuts in the volume maintain this standard. The illustrations appear new to the English student, as they are adopted from Schroeder, Winckel, Martin's *Atlas*, and Dührssen, works not often accessible to the general reader. In addition there are a liberal number of original illustrations—a feature not usually seen in a manual.

In conclusion, we feel warranted in recommending the book to the undergraduate and polyclinic student as a safe guide both to general principles and practice.

E. V. DE W.

DIFFERENCES IN THE NERVOUS ORGANIZATION OF MAN AND WOMAN, PHYSIOLOGICAL AND PATHOLOGICAL. By HARRY CAMPBELL, M.D., B.S. (Lond.), Member of the Royal College of Physicians; Senior Assistant Physician and Pathologist to the Northwest London Hospital. Pp. xi., 383. London: H. K. Lewis, 1891.

THE author divides his work into three parts, the first of which concerns the evolution of sex; the second is a pathological application of the conclusions in Part I., and the third is devoted to psycho-physiological considerations. While clinical observations are not wanting, it is as a biologist, or, if the term be allowable, as a speculative physiologist, that the subject is approached and treated by the author. The influence of Darwin, Spencer, Weismann, and Bain is everywhere more apparent than that of the pure physiologists or clinicians. The information which one obtains is, therefore, speculative and theoretical, rather than definite. One does not know that it is assumed that original views are propounded. It must be admitted, however, that the book is a very readable one, never obscure in its statements, though at times verging upon the prolix.

The elucidation of Weismann's views as to the part played by the male and female elements, germ and sperm, respectively, in the development of the ovum and the evolution of sex, is extremely interesting; but his reasoning, to the reviewer's mind at least, is not conclusive in proving that all organisms in which the sexes are separate came from hermaphrodite ancestors, the argument or reason being that of convenience. Neither are his statements accepted with reference to the limited influence of heredity and the power of profound maternal impressions upon foetal development. Too many concrete instances of such influence are available to be ignored in elaborating a theory upon this subject.

His generalizations concerning the relative nervous development and mental capacity of men and women are evidently intended to be fair, and are conceived in a broader spirit than are those of Schopenhauer, which he quotes, and all similar pessimists. The philosophy of such subjects is far different from the philosophy of a generation ago, and will be yet more different a generation hence, when the problem of the higher education of women has been more thoroughly investigated and its results more extensively observed. It will probably appear at that time that woman is influenced by her environment very much as man has been, and that the intrinsic mental differences between the two sexes are not so great as has always been assumed. If woman is an undeveloped man, as the author would seem to assert on the authority of Darwin and Spencer, why may she not, like man, be susceptible of development under suitable surroundings?

The discussion as to the influence of the ovaries upon the various functions of women will not harmonize with the views of all gynecologists, nor the statement as to the supreme importance of the Fallopian tubes in menstruation, nor the statement that "the periodic flow continues in the great majority of cases after the removal of the ovaries." The psycho-physiological speculations of Part III. show much ingenuity of reasoning, and include a consideration of Hughlings-Jack-

son's theory as to the physical substratum of consciousness and mind. Tangible and conclusive results in this direction are much to be desired, and seem to be no less elusive and no nearer attainment than they have ever been.

A. F. C.

SURGERY: ITS THEORY AND PRACTICE. By WILLIAM JOHNSON
WALSHAM. Third Edition.

THE small size of this book renders it useful to medical students; yet it is not so condensed as to be valueless to the practitioner who desires a volume for ready reference. The bastard title, *Praetical Surgery*, shown on the fly-leaf, does not seem to the reviewer to be in keeping with the full title of the book given by the author; for, although the work is a practical one, it deals with theoretical surgery as well. This third edition contains about one hundred pages more than the first edition, issued about four years ago.

The section on General Pathology of Surgical Diseases discusses, among other subjects, inflammation—its causes, results; and the relation of bacteria to surgical conditions. While this part of the book gives, perhaps, all the essential facts bearing upon the relation of bacteria to inflammation, yet the statements are obscured by the manner of their presentation. As a result of this defect the student would have great difficulty in thoroughly understanding and remembering the important facts presented, though a well-informed graduate would probably find all that is essential for him to know. A perusal of this portion of the book gives the impression that the author has added recent results and investigations to his previous manuscript without thoroughly incorporating the new with the old. Perhaps this is partly due to the conservatism of one who was trained under the old pathology. The retention of the terms "laudable" or "healthy" pus is an illustration of this defect. The author recommends treating sinuses by scraping, and other somewhat antiquated methods, with little or no mention of the preferable plan of dissecting them out and suturing the raw surfaces.

It is a fair criticism to say that the definitions are indefinite and scarcely satisfactory for use in teaching students. The articles touching on Surgical Pathology have excellent diagrammatic illustrations, which are especially intelligible and valuable. The articles treating of the Practice of Surgery seem clear, succinct, and satisfactory. It may indeed be said that the author has here compressed a great deal of valuable information into a small compass. This portion of the work is as good, probably, as can be found in any small text-book of surgery.

It is doubtful whether, in a work of this size on general surgery, the insertion of articles on diseases of the eye and of the ear are required, since such articles, when condensed, can scarcely give a true understanding of the principles and practice of these specialties. These sections have very wisely been assigned to the pens of specialists, who have acted as collaborators of the author.

J. B. R.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF
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ERYTHROPHLEIN.

In *La Médecine Moderne*, 1891, No. 49, p. 825, PROF. G. SÉE presents a valuable paper upon this little-known cardiac remedy. According to the writer the active principle of the bark of the *Erythrophlæum Guinense*, an African tree, is the alkaloid, soluble in alcohol and ether, and which also furnishes the hydrochlorate, which crystallizes, and is soluble in water. It is about as poisonous as the amorphous digitaline of MM. Homolle and Quevenne, and less so than the crystallized digitaline of Nativelle. Its physiology has been carefully investigated by the late M. Rochefontaine. The first symptoms of poisoning are agitation, unrest, followed by a period of depression, which precedes the efforts of vomiting, or vomiting itself. There is an increase of the intra-arterial blood-pressure, an irregularity, then a slowing of the pulse, which is remarkable for the regularity of the cardiac impulses, the energy of each pulsation, and the uniformity of the blood-pressure. This arterial pressure is not modified by the respiratory movements. Later comes a feeble and rapid pulse; the respiration causes variations in blood-pressure, which gradually falls until the heart ceases to beat. The respirations ordinarily are slower and deeper during the period of rapid cardiac pulsation; in the terminal period of poisoning they are vigorous and more frequent, stopping at the same time as the heart. One, two, or three minutes after the heart has stopped, respiratory movement may recommence, only to again cease after a few minutes. The remedy then acts both upon the heart and lungs. All authors place it in the digitalis group. Brunton believes that with aconitine and veratrine it acts in the same way upon the *par vagum*, and he places it among the cardiac tonics, as digitalis, strophanthus, and convallaria. With Schmiedeberg and Williams, Harnock recognizes three stages of action, viz. :
1. Increase of the cardiac systole. 2. Stoppage of the ventricle in systole,

and finally paralysis of the heart itself. 3. Later, the heart paralyzed, the pressure falls, the pulse quickens, and death occurs in convulsions, and with a great disturbance of the respiration.

The author has recorded the results of its administration in nineteen cases: six, valvular or simple cardiac lesions; one, pulmonary phthisis with dry pericarditis; one, pulmonary phthisis without heart lesion; one, uræmic dyspnœa, with interstitial nephritis; six, emphysema or asthma; four cases of nervous dyspnœa with or without tympanites. The medicinal dose is from one-fortieth to one-twenty-fourth of a grain. This dose does not produce any digestive disturbance, nor but slight modification of the condition of the heart, but the respiration is profoundly, constantly, and persistently changed. The dyspnœas, except of thermic origin, are diminished. There is a feeling of *bien-être*, an ease of respiration, which the patient himself remarks; the desire for air is satisfied, he breathes more freely. The number of respirations markedly diminishes, and the type is profoundly changed; the inspiration largely increases, and without effort of the accessory muscles of inspiration, the diaphragm and the scaleni and external intercostals being sufficient to greatly increase the chest capacity. It has no action upon the blood itself, so far as hæmoglobin is concerned, according to the report of MM. Hardy and Roux; but, however, it so influences the respiratory centres, either in the bulb or the medulla that the respiratory muscles, particularly the diaphragm, are incited to action, and this is by way of the phrenics.

GANGRENE FROM INJECTIONS OF ANTIPYRINE.

At a meeting of the French Academy of Medicine, held on November 3d, M. VERNEUIL related two cases in which subcutaneous injections of antipyrine, made in the foot, had been followed by gangrene (*L'Abeille Médicale*, 1891, No. 55, p. 433). The first case, a man of thirty-nine years, in good health, no pathological antecedents, after an injury suffered from great pain in the thigh, and which later extended downward to the toe. Injection, made *loco dolenti*, was followed by gangrene, a general condition calling for anxiety, but without relief of pain. The second case was of a type described by M. Raymond under the name of gangrene of the extremities. Pain in the great toe was the reason for the treatment. In the following year gangrene, without injection, was observed, which necessitated amputation.

M. Dujardin-Beaumetz, in commenting upon these cases, considered that the especial cause was not the injection of antipyrine, but any other injection under similar circumstances might have been followed by a like result. When the nutrition of the tissues is interfered with from any cause, gangrene is likely to follow the injection of an irritating substance. In the second case the first gangrene was consecutive to the injection, but the second developed without any injection.

THE USE OF HYOSCINE HYDROCHLORATE IN INSANITY.

MM. RAMADIER AND SÉRIEUX (*Les Nouveaux Remèdes*, 1891, No. 21, p. 502) believe that in maniacal conditions, in the attacks of intense excitement, no matter what its kind is, this drug has rendered great service: simple

mania, alcoholic delirium, epileptic delirium, excitement from very active sensory disturbances, excitement in certain cases of melancholia, maniacal excitement in general paralysis, symptomatic delirium of fevers, hallucinations of a maniacal type.

It is recommended to be used hypodermatically, dose one two-hundred-and-fortieth (in very debilitated subjects) to one-eightieth of a grain. The effects are obtained within half an hour, and consist of mental repose, intellectual calm, soon followed by sleep, which lasts frequently twelve hours, with a further period of quiet. Cardiac lesions, Bright's disease, pneumonia, general paralysis, cachexia, have not seemed to be contra-indications to the use of hyosine. The various accidents attributed to the use of this drug—delirium, collapse—appear to be due to impurities, none of which have been met with at the asylum of Vacluse, in an experience of two years, covering more than two hundred cases.

LACTATE OF STRONTIUM IN ALBUMINURIA.

M. DUJARDIN-BEAUMETZ, in speaking before the French Society of Therapeutics, presents a *résumé* of the literature of strontium (*Les Nouveaux Remèdes*, No. 22, p. 526). M. Ferré has used bromide of strontium in epileptics with equal success as with other alkaline bromides, and it is even better borne. M. Sée considers that the salts of strontium favor stomachic digestion. M. C. Paul has stated that in patients suffering from albuminuria the salts of strontium cause a disappearance of the albumin from the urine. The speaker had administered lactate of strontium to one patient suffering from Bright's disease, to four with albumin as a result of cardiac disease. In all cases within from one to four days was the albumin diminished to one-half of its former amount. The explanation of the favorable action of strontium is to be found in its benefit to the digestive processes, so that the amount of toxic material formed in the alimentary canal is reduced to its smallest quantity. He insists upon a diet of eggs and milk, the former being advocated contrary to the conclusions of Bernard. He uses a 20 per cent. aqueous solution of the lactate of strontium, and administers a teaspoonful twice daily. When purity of the drug is insisted upon, we need not fear any untoward effects.

TO PREVENT GROWTH OF FUNGUS IN SUGAR SOLUTIONS.

MR. LEON C. FINK has carried out some experiments to determine exactly what proportion of salicylic acid is necessary to prevent growth of fungus in dilute aqueous solutions of sugar (*Bulletin of Pharmacy*, 1891, No. 11, p. 493). He finds that one-half grain of salicylic acid in each ounce of a one to three solution of sugar is an absolute safeguard against the formation of fungus, the liquid having remained perfectly clear and transparent after exposure for one year.

DYSENTERY.

In the *Medical Press and Circular*, 1891, No. 19, p. 434, PROF. BAHADURJI attempts a rational explanation of the nature and treatment of this disease. The points to be attended to are:

1. All irritants, direct and indirect, should be avoided: stimulating foods

and drinks, easily decomposing foods, meat and its extracts—even milk is irritating. 2. The alkalies must be given to get rid of the unhealthy, dirty mucus. 3. Putrefactive decomposition should be counteracted by subnitrate of bismuth. 4. The intestinal glands should be influenced, and their morbid activity stopped, by small doses of ipecacuanha. 5. Irritation from intestinal movement checked and secretion from glands diminished by opium. 6. Copious, watery stools should be remedied by catechu in powder. The dietary is nothing more than arrowroot and milk. On the fourth or fifth day some extra milk is allowed, and if well borne, on the next day a little bread. Ordinary diet is withheld for a week longer.

A NEW SAFETY CHLOROFORM INHALER.

So long as our English cousins persist in using chloroform, every device which tends to diminish its dangers should receive earnest attention. MR. ALEXANDER DUKE (*Medical Press and Circular*, 1891, No. 19, p. 440) describes an apparatus, the main advantage of which is that every inspiration and expiration, however faint, will cause the valves, through which the air must pass, to produce a sound audible to the administrator, and so give to both himself and the bystanders immediate notice of danger to the patient. With this apparatus the respiration can be carefully watched.

THE TREATMENT OF EPILEPSY BY BORATE OF SODA.

In *Le Progrès Médical*, 1891, No. 41, p. 257, M. LE PR. MAIRET concludes, from his observations on twenty-two cases, extending over fifteen months, that borax is useful against epileptic attacks, in that it can diminish or even suppress them for several consecutive months; in the symptomatic epilepsies it succeeds better than bromide of potash; in the epileptic neuroses, bromide of potash is preferable, and only when it has failed should borax be used in cases of this kind. The drug is selected after its purity has been established, and is dissolved in equal parts of glycerin or honey, preferably the former. The dose is not stated, but six and one-half drachms is mentioned as a large dose.

ELECTRO THERAPY.

DR. R. VIGOUROUX (*Le Progrès Médical*, 1891, No. 42, p. 273) argues for the employment of Franklinism for general stimulation, with the use of the galvanic or faradic currents for local purposes, but based upon a pathogenic hypothesis. For instance, in sciatica, positive pole for diminution of pain; negative pole if a revulsive measure is intended. Or in exophthalmic goitre, if one believes it to be a vasomotor paralysis, faradization is indicated.

DEATH FROM THE BITE OF A FLY.

DR. RICH. PALTAUF (*Wiener klinische Wochenschrift*, 1891, No. 35, p. 646) reports a case of death from a fly-bite in forty-eight hours, from pyæmia. The point of infection was the right eyelid, erysipelatous swelling of right side of head followed, with high fever, symptoms of meningitis, and collapse

from cardiac failure. The post-mortem showed thrombo-phlebitis of temporal regions, dura and cavernous sinuses, infarctions in lungs, and empyema. This case suggests the transmission of various diseases by flies, viz.: relapsing fever, typhus, intermittent, as well as the carrying of the eggs of parasites, spores, and several microorganisms. The rapidity of the march of the disease suggests that of malignant pustule.

EUCALYPTOL.

MR. G. ARCHIE STOCKWELL shows (*Bulletin of Pharmacy*, 1891, No. 10, p. 447) that eucalyptol is not a proper name for oil of eucalyptus, but should be restricted to eucalyptus camphor, this perversion of the word being either due to ignorance or for ulterior ends. Eucalyptus camphor, however, has no therapeutic value beyond that of a good oil, which, as it is a pure terebinthinate, may agreeably be substituted for common oil of turpentine.

TONSILLITIS.

In the *Revue de Thérapeutique Médico-chirurgicale*, 1891, No. 21, p. 569, DR. SICARD considers acute tonsillitis to be an infectious and contagious disease. He notes the coincidence with albuminuria, rheumatic pains, and disturbances of the sexual organs. Tonsillitis, as a local manifestation of a general infection, may be benign, or, on the other hand, can be the cause of great anxiety. Since it is contagious, antisepsis must be strenuously insisted upon. Gargles are ordered, to be frequently repeated, of one per cent. solutions of boric acid, or salicylic acid from one to two-tenths per cent., carbolic acid being badly tolerated, because of the taste, with chloral as a sedative and antiseptic as well, with cocaine in case of great pain.

NAPHTHALIN IN WHOOPING-COUGH.

DR. CHAVERNAC (of Aix) has used (*Bulletin Gén. de Thérapeutique*, 1891, 40 Liv. p. 337) antipyrine and quinine (method of Binz) without much success. After reviewing the results of the administration of thyme, ouabaïne, chloride of silver with hyposulphite of soda, grindelia robusta, ozone, bromoform, chloroform water, the writer details his experience with naphthalin, which is used to the amount of five drachms, vaporized by heat, care being taken not to burn it; in uncomplicated cases cure results within three days. Pulmonary tuberculosis is a contra-indication; although the vapor is agreeable, it is badly borne by these unfortunates.

THE DIETETIC TREATMENT OF DIABETES.

In *L'Union Médicale*, 1891, No. 122, p. 529, DR. PAUL CHÉRON, after giving the principles underlying the dietary methods of Seeger, Senator, Frerichs, Naunyn, Schnée, Bouchardat, and Dujardin-Beaumetz, states that the diet for each particular case must be determined by experiment, regarding as absolutely prohibited those viands concerning which there is consensus of medical opinion. That the diet list should be enlarged at the earliest practicable moment, keeping guard as to the result by repeated urinary analyses.

The nutrition must be kept up, but an excessive amount of food is a frequent cause of the disease. As an assistance, exercise (Bouchardat), freedom from care and anxiety, baths, life in the open air, are mentioned.

THE ABUSE OF HYPNOTICS.

DR. JOHN B. CHAPIN, in the *American Journal of Insanity*, vol. xlviii. p. 202, reports seven cases admitted as insane, in which the excessive amount of hypnotics taken under medical advice was an important factor in accounting for their condition. The symptoms were hallucinations, restlessness, motor disturbances, fear of impending calamity, manifest constitutional disturbances, sensory disturbances, suicidal attempts, and delusions. The physical signs were dilated, sluggish pupil; diminished mental reflexes; feeble heart-beat; flabby, coated, pale tongue, and tumid abdomen. In hospital practice the use of hypnotics is becoming less with each year, and private practice should follow that example. However, the increasing number of the insane cared for at home leads to more extended use of hypnotics, with great temptation to enlarge the dose when violent symptoms arise.

PENTAL AS AN ANÆSTHETIC.

In the *Therapeutische Monatshefte*, 1891, p. 509, PROF. HOLLAENDER gives an interesting historical sketch of pental (trimethylæthyl, also called β -isomyl, C_5H_{10}). Soluble in alcohol, chloroform, or ether; insoluble in water; extremely volatile. Narcosis is readily obtained. Patients readily open their mouth on command, even during deep narcosis. No after-symptoms, except slight headache, possibly nausea or vomiting. It appears to be absolutely safe.

THE USE OF DRUGS IN THE TREATMENT OF EARLY PHTHISIS.

DR. T. C. THOROWGOOD (*British Medical Journal*, 1891, p. 836), in a paper on this subject, stated that in bronchitis or persistent consolidation of lung after pneumonia, brilliant results have been obtained by five grains of hypophosphite of soda three times daily. In pleurisy with effusion, this treatment fails—although successful in a deposit producing friction-sounds of a rough character.

He believes that the potash salts have very great value as a liquefying agent—the lime to be used when secretion is profuse, which also checks sweating and diarrhœa. A respirator should be worn holding iodoform with alcohol, ether, and oil of eucalyptus; counter-irritation should not be forgotten.

HELENINE IN TUBERCULOSIS.

MR. T. J. BAKENHAM (*British Medical Journal*, 1891, p. 838) believes that in this drug we have a real protection against the disease. It is derived from the *Inula helenium*. He quotes Valenzuela (1883), Bacza and Korab (1885), Marpmann (1887). The following substances are prepared from the elecampane root: 1, helenine; 2, alant camphor; 3, alantic anhydride; 4,

alantol. The only substance that could be prepared in large quantities was alantic anhydride.

By culture experiments he found that helenine and associated bodies had a real action on the tubercle bacillus. He administered the drug to guinea-pigs during prolonged periods; subsequently inoculated them with tuberculous material; he fed them on helenine, inoculated them, and continued feeding on helenine.

The drug itself produced no ill effect, but the course of the disease, after inoculation, was retarded but not in any case arrested. In the animals protected by helenine, very few bacilli were found in the tissues.

The great drawback to the use of helenine in man is the expense. In a few cases six grains *per diem* have been used, which the author considers to be too small a dosage.

[These experiments have been carried out with great care, and the conclusions arrived at appear to be legitimate when the facts are carefully studied. It is to be hoped that a clinical report will soon be presented.—ED.]

CHLORALAMIDE.

DR. E. MANSEL SYMPSON (*Practitioner*, vol. xlvii. p. 274), presents the results of his experience. While praising paraldehyde, he believes sulfonal and chloralamide to be more convenient and agreeable to the patient. He recommends it for the insomnia and delirium of acute fevers, delirium tremens, nervous insomnia (dose 30 to 40 grains). Sulfonal is more powerful in mental disease, but chloralamide is better than paraldehyde in lung disease. It does not produce a necessity for larger doses, but a habit of going to sleep without it.

BENZO-NAPHTHOL.

La Semaine Médicale, 1891, No. 53, p. 210, contains a very practical note concerning the use of benzoate of β -naphthol (M. YVON and M. LE DR. BERLIOZ), which has a formula $C_{10}H_7O(C_7H_5O)$, and belongs to the aromatic series. Insoluble in water; chloroform is the best excipient. This remedy, when introduced into the intestine, decomposes into β -naphthol, which remains there, and benzoic acid, which is eliminated by the urine, partly as a benzoate and partly as a hippurate. This much can now be said:

1. That its coefficient of toxicity is small.
2. Its antiseptic power is comparable to other intestinal antiseptics.
3. It facilitates diuresis and diminishes the urinary toxicity.
4. The portion absorbed is rapidly eliminated by the urine.
5. It can be administered to seventy-five grains in an adult, and to thirty grains in a child—preferably in small doses frequently repeated.

TREATMENT OF BLENNORRHAGIC ORCHITIS BY THE CARBOLIC ACID SPRAY.

DR. PAUL THIÉRY and M. HENRI FOSSE state at length the advantages of this method over permanent carbolic acid baths in carbuncles and boils, phlegmonous inflammations, urinary infiltrations, erysipelas, prolapsed

hæmorrhoids, lymphangitis, and preparatory antisepsis (*Gazette Médicale de Paris*, 1891, No. 44, p. 518, and No. 45, p. 532). This method is valuable because it is antiseptic, and, beside, presents two qualities of the poultice—warmth and moisture—for the pain and swelling. In support of their views they cite twenty-five cases in which this method has been employed. A synopsis of the first twenty cases is added, giving in each one the number of treatments necessary to cause the pain to disappear, as well as the number of days required. Pain was the leading symptom for the selection of this method, and as well when the inflammatory symptoms were marked. The patient is placed in position with the surfaces about the seat of disease protected by rubber cloth. The atomizer is about twelve inches distant, and the spray, as warm as possible, is directed against the parts, which are covered by a layer of light gauze, for twenty to thirty minutes. These sittings are repeated two or three times daily for so long a time as may be necessary. The solution used is one to twenty, or possibly as weak as one to fifty.

They conclude that this method is antiseptic, relieves pain, and favors resolution; it combats the two principal symptoms—pain and inflammation; it can replace with advantage the local remedies usually employed; there are never accidents; it diminishes the duration of the disease; it being an efficacious and harmless remedy, it should be used in epididymitis as well as in acute orchitis. It has not been possible to introduce into the body by this method such remedies as salicylate of soda or iodide of potash.

FATAL POISONING BY EPSOM SALT.

DR. WILLIAM LANG reports (*The Lancet*, 1891, vol. ii. p. 1037) that a woman, about thirty-five years old, accidentally took four ounces of sulphate of magnesia in a tumbler of hot water. She complained of burning pain in stomach and bowels, choking feeling, power going out of arms and legs. The tongue and mucous membrane of mouth were normal; no sickness, vomiting, or purging; pulse 96, and regular. He gave as emetic, thirty grains of sulphate of zinc, which did not act. Patient became collapsed, with dilated pupils, slight twitching of muscles of face, complete paralysis, and became comatose and died in one and a quarter hours after ingestion of the salt. There was no autopsy.

The following papers are worthy of note:

DR. S. S. WALLIAN ("Aërotherapeusis," *New York Medical Journal*, 1891, vol. liv. p. 398) gives a paper on "Imbibition as a Method of Exhibiting the Gases," which is a study of sulphuretted hydrogen, carbon dioxide, nitrogen monoxide and oxygen. He strongly advocates an oxygen water to which is added an equal or half its volume of chemically pure nitrogen monoxide.

PROF. A. BONOME (*Fortschritte der Medicin*, 1891, Bd. ix, p. 743), in "The Diplococcus of Pneumonia and the Bacteria of Hemorrhagic Dog Septicæmia," records his studies concerning immunity and the therapeutic importance of transfusion of blood and serum.

DR. T. LAUDER BRUNTON (*Practitioner*, vol. xlvii. p. 241), in "The Treatment of Cardiac Pain and Angina Pectoris," advocates the use of the nitrites, hydroxylamine (no clinical observation) for attacks; iodide of potash for

recurrence; iron and arsenic in fatty degeneration. Oertel's method with great caution. Tobacco generally forbidden.

DR. P. WATSON WILLIAMS (*Ibid.*, p. 266), in "Cactus Grandiflorus," presents a clinical study of more than 200 cases, extending over some years. It acts upon the accelerator nerves of the heart and sympathetic ganglia, shortening the diastole and stimulating the spinal vasomotor nerve centres. More useful in functional diseases of heart; partial failure in angina pectoris; not much use in dilated, thin-walled hearts; fails in mitral obstruction, but useful in aortic regurgitation.

DR. THEODOR JOH. ZERNER (*Wiener klinische Wochenschrift*, 1891, No. 37, p. 679), in "The Influence of Digitalis upon the Respiration," shows as a result of experimental investigation that the amount of respiratory pressure and volume of air rose and fell with the increase and decrease of the blood-pressure; hence he concludes that digitalis increases the work of both ventricles.

DR. CHEVAL (*Journal de Médecine de Bruxelles*, 1891, No. 19, p. 585), in "The Electro-thermo-cautery," presents an elaborate paper on the physics of electricity, with practical remarks as to the source of electricity and the arrangement of apparatus.

DR. A. MANQUAT (*Lyon Médical*, 1891, No. 43, p. 252), in a very complete article entitled "The Indications of Quinine," gives concise directions for the use of this drug, especially in malarial fevers, typhoid, and also when locally applied.

THE TOXIC PROPERTIES OF ACONITE PREPARATIONS.

In the *Gazette Hebdomadaire de Médecine et de Chirurgie*, 1891, No. 44, p. 521, DR. L. LEREBoullet, after citing the various opinions regarding the poisonous dose of aconite, calls attention to the variable proportion of the aconitine which is contained in the plant. Even the granules of aconitine, which seem to be harmless, can readily give rise to fatal symptoms if carelessly used. Caution must be exercised, lest, after using weak preparations the practitioner may choose a dose which in a good preparation may be absolutely dangerous. The increasing number of accidents shows that this warning is timely.

THE EFFECT OF CHLOROFORM ON THE RESPIRATORY CENTRE, THE VASOMOTOR CENTRE, AND THE HEART.

DR. LEWIS A. SHORE, at the same meeting, gave an account of certain experiments made by Dr. Gaskell and himself to determine what this effect is (*Ibid.*, p. 1089). Application of one or two drops of chloroform directly to the exposed fourth ventricle of the medulla of rabbits was fatal. Respiration ceased by quickly diminishing the extent and depth of the breathing without influencing the rate. With this failure the blood-pressure gradually fell, but was still considerable when the respiration stopped. Intra-arterial injections slightly stimulated the respiratory centre, and then paralyzed it; also the vasomotor centre, which was paralyzed with large doses. The respiratory centre failed before there was any depression of the vasomotor centre. Intra-venous injection produced failure of the heart's action, rather than

paralysis of the vasomotor centre. From an experiment in which the brain of one animal was supplied with blood from another, it was shown, in confirmation of the preceding experiments, that the fall of blood-pressure was due primarily to direct action on the heart, and not to a depression of the vasomotor centre. The respiration begins to fail before the fall of pressure is dangerous. These experiments show that chloroform can be administered without interfering with perfectly regular respiration, and complete insensibility can be produced without obvious weakening of the heart. The practical deduction is, that this anæsthetic must be administered gradually and with plenty of air, and that great care should be taken not to push the chloroform when struggling or gasping respiration occurs.

A CASE OF TRAUMATIC TETANUS SUCCESSFULLY TREATED WITH CHLORAL AND CALABAR BEAN.

DR. A. RADCLIFFE reports that a ten-year-old boy, ten days after injury to top of foot, complained of stiffness in back, jaws stiff, and he could not eat. On the following day the foot had healed; there was no soreness, but *risus sardonius* was present. He could open his mouth a little, and walked about the room. He was placed in a dark room and given chloral, seven grains every hour, and four drops of the fresh fluid extract of Calabar bean every two hours. The symptoms increased until a complete picture of the disease was presented, the contractions being at times so severe that chloroform was necessary. Recovery took place after he had been under treatment for five weeks (*Therapeutic Gazette*, 1891, No. 11, p. 742).

A NEW METHOD OF TREATING DIPHTHERIA.

In the *Practitioner* for 1891, No. 282, p. 430, we find a very instructive paper by DR. C. SMITH, based upon the observation of seventeen cases. His treatment consists in the continuous inhalation of a vapor composed of a mixture of carbolic acid, eucalyptus oil, and turpentine until the patient is well, and at the same time support to the heart by stimulants, as well as tincture of digitalis, tincture of belladonna, and aromatic spirits of ammonia. The method of application is claimed to be new. Place the patient in bed—first, to facilitate the inhalation; secondly, by retention of the horizontal position to spare the heart. Fix a tent over the patient by arranging a sheet, which should not be too large, but should be closed in on every side, except in front of his face, so that he can look about, be readily watched, and receive a supply of fresh air. The ingredients are carbolic acid, one part; eucalyptus oil, one part; turpentine, from eight parts to four, if stronger preparation is desired. Use steam continuously in the cot; soak two cloths about a foot square in the mixture, place one close to the face, the other on the pillow near the head. For adults, one or two other cloths may be hung about the cot. These cloths must not touch the face, and should be kept continually moistened. Breathing must be done through the mouth. The acid preferred is Calvert No. 2, which is pleasant and causes less discomfort. If the stronger preparation is used, to combat the depression of the heart use brandy in full doses or the drugs mentioned above. Steam must be always

used in laryngeal cases. Further disinfection of the room is not necessary, and no case of further infection has occurred. Sometimes mercurial ointment can be freely applied to the skin of the neck and throat with benefit, and occasionally he used borax in the manner recommended by Hood, a small quantity being put in the mouth every half-hour, by day and night, for several days.

MEDICINE.

UNDER THE CHARGE OF

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SPONTANEOUS PNEUMOTHORAX AND PNEUMO-PERICARDIUM.

MR. R. A. LUNDIE, F.R.C.S., records the following case in the *Edinburgh Medical Journal*, 1891, No. 1805: A lawyer's clerk, aged twenty, with a tubercular family history, while sitting quietly at home after dinner was seized with sudden severe pain in the left chest. He was forced to take to his bed at once on account of the intense dyspnœa on the slightest exertion. When seen, four days later, there was well-marked left pneumothorax, and he complained of a "feeling of trickling" in the left side. The whole left side was hyper-resonant, and no heart dulness could be made out anywhere. Heart-sounds faint, but otherwise normal, except when he had the "trickling feeling," when the first sound acquired a semi-musical quality. He recovered rapidly from this attack, and returned to his work in less than a month. At this time the heart was normal in position and action.

Not many days after, as he was walking quietly home from work, he was seized with pain in the left side. Next day he complained of discomfort in the left chest with a sensation of "splashing" there. The heart impulse in the fourth and fifth interspaces had a peculiar thrilling feeling, and the heart-sounds were marked by singular, irregular, semi-musical accompaniments. On subsequent more minute examination it was found that there was a tympanitic area which occupied the position of a slightly enlarged pericardium; and the heart fell to the most dependent portion of it with each movement of the patient. The heart-sounds were obscured by irregular, tumultuous, tinkling accompaniments, such that a "peal of bells" was a more apt description of them than the "water-wheel." This was best heard with the patient on his left side. When he lay on his back the musical sounds were at times absent, though the heart-sounds retained a metallic ring. The

diagnosis of pneumo-pericardium was confirmed by Dr. Brackeubridge, who pointed out that when the tympanitic area was rapidly percussed the pitch of the note changed slightly with each cardiac cycle. A fortnight later the præcordial area was still a trifle more resonant than normal. The heart-sounds were healthy, except for a faint murmur over the sternum at the level of the third cartilage. The pulse was never in the least irregular.

Ten months later the patient continued quite well, with the exception of occasional painful throbbing below the left nipple, which he never experienced before his illness. It never lasts more than a minute, and recurs at intervals of a week or so. He leads an active life, and is able to play cricket, etc. The most remarkable points of the case are summarized as follows:

1. The presence of a chronic morbid process in the chest, sufficient to lead ultimately to rupture of the pleura and pericardium, with an almost entire absence of symptoms.

2. The occurrence of pneumothorax in conditions of apparent health.

3. Backward displacement of the heart while pneumothorax was present.

4. Recovery from pneumothorax without any signs of inflammation or effusion.

5. The occurrence of pneumo-pericardium after an interval, also in conditions of apparent health.

6. The entire absence of irregularity of the pulse, disturbance of the circulation, or interference with the general health while air was present in the pericardium.

7. Recovery from pneumo-pericardium without any signs of inflammation or effusion, except the small, perhaps normal, amount of fluid in the pericardium indicated by the auscultatory signs.

ALBUMOSURIA.

DRS. LEE DICKINSON and W. K. FYFFE communicated to the Clinical Society of London (November, 1891) a series of twenty cases of pneumonia and allied conditions in which the urine contained albumose. The peptone spoken of in earlier papers on peptonuria would, in the present day, probably be called albumose. In no case was true peptone ever found, but whenever a biuret reaction was obtained this was found to be due to albumose precipitable by ammonium sulphate. After removing from the urine such proteid matter as was coagulable by heat it was treated with nitric acid and the biuret test, and in those cases where a positive result was obtained a pink color appeared at the junction of the fluids on floating the urine on to the caustic soda solution containing copper sulphate. The albumose (proto- and dextro-albumose) was sometimes present in large quantities—more than one per cent.

Judging from the results of experiments on animals, it seemed possible that diarrhœa, from which many of the patients suffered, might be due to albumose in the blood. A high mortality and serious sequelæ, apart from the development of empyema, characterized the cases brought forward.

The origin of the albumose is pus, or at least inflammatory exudation, especially that of pneumonia. Albumosuria also occurs in acute rheumatism. According to the authors its only clinical relation is with diarrhœa, and it has no special relation with organic disease of the kidney.

PULSATIONS AND MURMURS IN THE GREAT VEINS OF THE NECK.

In a thoughtful article under the above title, Drs. SIDNEY RINGER and HARRINGTON SAINSBURY discuss the physiological and clinical significance of pulsation in the internal and external jugular veins. The value of the paper is enhanced by copious references to the works of other observers.

The moving force causing the venous current is a *vis a tergo*, and the blood-flow into the chest is of a remittent character owing to the effects of the cardiac and pulmonary movements on the stream. As a rule, in health, the obstruction within the chest does not exceed the force urging on the venous blood. In health, under ordinary conditions, however, the remittent action of the venous flow may show itself as a pulsation, the beat of which will be caused by a *vis a tergo*; whilst in exceptional states in health, and more markedly in disease, such pulsation may be caused by a *vis a fronte*. Important time-relations mark theoretically the pulsations according as these are direct or regurgitant.

The following pulsations of cardiac rhythm are recognized.

1. Transmission across the capillaries of the intermittent impulses of the left ventricle.

2. Transmission of pulsation from the brain *en masse* to the veins issuing from the cranial cavity. The authors doubt whether pulsation visible at the root of the neck ever bears this interpretation.

3. Pulsation communicated from an adjacent artery.

(In these three varieties there is no hindrance to the onward flow of the blood, and in the first two the *vis a tergo* is the obvious efficient cause.)

4. Pulsation in the veins at the root of the neck extending a variable distance up the neck and owning as a cause intra-thoracic changes of pressure. The evidence appears to the authors strongly in favor of a normal jugular pulse in man the result of intra-thoracic changes, and not commonly visible owing to its feebleness and masking by the integuments. Pulsating jugulars, in disease, with overloaded right ventricle, are universally admitted. After discussing the distinguishing characteristics of arterial and venous pulsation the authors state, in regard to that under discussion, that neither the form of the pulsation, nor its site, nor the effects of posture, afford any reliable criteria for determining whether it be of health or disease. On the other hand, "If the veins of the neck, especially the external jugular, of a chlorotic woman be carefully watched in the recumbent posture, with the head slightly raised or not raised at all, it will frequently be determinable with ease that the filling of the vein, its beat, precedes slightly the carotid beat felt on the opposite side of the neck; perhaps it will be found even more readily that the collapse of the vein falls in exactly with the carotid impulse. With each cardiac cycle this sequence is repeated—presystolic filling, systolic collapse. In some forty cases of our own, including pathological cases, though chiefly consisting of anæmias without heart or lung mischief, the systolic collapse was noted in eleven certainly, in two with less certainty. Excluding six or seven cases of actual chest disease, and a few in which no note is recorded about pulsation, the proportion in which systolic venous collapse is observed in marked anæmia without thoracic disease becomes a considerable one, and

probably is little under one-half. The subjects were mostly lying quite flat when this was noted. . . .

"The evidence is fairly complete that the normal venous pulse, when visible, shows its main stroke in the presystole, its main collapse in the commencement of systole; and this accordingly is the point which we must seek to establish in the case of any vein which pulsates—its time-relations—for we shall see that the venous pulse of disease differs very decidedly from the normal pulse in respect of these relations."

This venous pulse of presystolic rise and systolic collapse is spoken of as physiological because it is found experimentally as a constant in healthy animals, and is occasionally seen in healthy men and women. How does the pathological venous pulse—the pulse of obstructed right heart—differ from the above?

This pulse is frequently double, and so far resembles the normal venous pulse. Careful observation of the time of pulsation, however, will show that one impulse, at any rate, falls in with the systole, the other, if well-marked, precedes the systole. There are thus presystolic and systolic impulses, the systolic collapse having been exchanged for a filling out of the vein. Obviously the systolic impulse of the vein is produced by the systole of the ventricle. Whether the tricuspid valve is competent or otherwise is not vital. The distended right auricle conducts back the ventricular pulse, and, as Gottwalt points out, it is the intervention of the flaccid auricle—in health—at the moment of ventricular systole which accounts for the absence of systolic impulse in the veins.—*Lancet*, 1891, Nos. 3561–62.

MORBID STATES OF THE HEART IN CHRONIC PHTHISIS.

Under this title, DR. W. S. FENWICK (London) publishes the results of an analysis of 1560 post-mortems made at the Brompton Hospital for Consumption, the results obtained being compared with the clinical notes of the cases.

In about 27 per cent. of the cases there was distinct evidence of hypertrophy of one or both ventricles. The causes of this were three-fold—a compensatory hypertrophy of the right ventricle in fibroid phthisis; left ventricle hypertrophy was mostly due to rheumatic endocarditis. In the remaining cases, about 9 per cent., there were hypertrophy and dilatation of the left ventricle associated with chronic interstitial nephritis. As regards the heart muscle it was "soft and fatty" in 11 per cent. only, being more generally described as "pale but healthy." No instance of tuberculous deposit in the heart was met with.

The writer lays some stress on the firm, laminated clots met with at the apex of the ventricle, or in the auricular appendix. In seven of the cases death occurred rapidly in the course of a chronic case. In each instance it was found that a piece of clot had been dislodged from the right heart and had blocked up a large branch of the pulmonary artery. The majority of the patients were females, and on six occasions the embolism lodged in the base of the right lung; once in the left.

No special importance is attached to slight thickening of the mitral and aortic valves met with in 12 per cent. of the cases. True endocarditis was

encountered in 43 cases, in 30 of which the disease was evidently of old standing; in the remaining 13 it is stated to have been recent and acute.

Of the 30 chronic cases, there were 9 of mitral incompetence, 4 of mitral stenosis, 4 each of aortic stenosis and incompetence. In 5 mitral and aortic incompetence coexisted. In 3 mitral and tricuspid disease were associated. In 12 cases the tuberculous disease was "very old;" in 9 it had undergone recent extension, while in 5 miliary tuberculosis had supervened on old apical mischief.

Of the 13 acute cases, the mitral valve alone was affected in 6, the aortic valve alone in 2, both valves in 3. In 2 the mitral and tricuspid were affected. In 11 of the cases there coexisted a more or less pronounced condition of kidney disease, which, in the writer's opinion, may throw some light on the origin of the endocarditis. In two cases an acute attack of endocarditis occurred in patients in whom acute miliary tuberculosis had complicated the original tuberculous disorder.

In 4 cases congenital malformation of the heart was associated with phthisis. In 3 the foramen ovale was patent; in the fourth the right ventricle was subdivided by an oblique septum. Double phthisis ran a fairly rapid course in each case. Pulmonary tubercle was found in 7 out of 24 cases of thoracic aneurism. In 5 the aneurism involved the ascending arch. In 3 of these the lung disease was obviously recent, in the other 2 latent.

Looking to the clinical side of his tables the writer finds that fatal hæmoptysis occurred nearly twice as frequently in cases where the heart presented an increase in volume as under normal conditions.

With regard to adherent pericardium, which existed in about 7 per cent. of the cases, the symptoms of cardiac failure were usually pronounced during life; in a majority a considerable degree of cyanosis was present before death. The writer adopts the view that cardiac thrombosis is a frequent cause of death, and most likely to occur in cases in which, from laryngeal disease or other causes, the patient has been debarred from taking sufficient nourishment.

The physical signs are with difficulty distinguishable from those of pulmonary embolism, except that the latter are usually ushered in with greater suddenness, are of greater moment, and are apt to lead to the physical signs of consolidation of some portion of the lung.

With reference to the cases of chronic valvular disease a history of previous rheumatic fever existed in 17 of the 20 cases in which the mitral and aortic valves were affected. Of the other 10 cases of stenosis of the various orifices a history of rheumatism was obtained in 2 only. Hæmoptysis was more or less severe in 12 of these cases, and caused death in 4. It appeared to be most frequent in cases of stenosis of the mitral and tricuspid valves.—*Practitioner*, 1891, No. 281.

MEDICAL TREATMENT OF PERITYPHLITIS.

The view, which appears to be gradually gaining ground, more especially among surgeons, that once inflammation of the appendix cæci has been diagnosticated these cases should be handed over for surgical treatment, has

induced DR. SAUNDBY, of Birmingham, to put on record fifteen cases of appendicitis which have been under his care during the past six years.

Among these fifteen cases there was only one death—the only case treated surgically—and the post-mortem appearances led the writer to believe that life might have been spared had he adhered to purely medical treatment. 86.6 per cent. were cured, and 6.6 per cent. relieved. The average length of treatment is admittedly long, and a more rapid cure by surgical means might be claimed, though the writer is of opinion that a little time may fairly be sacrificed in view of the inevitable risks of surgical interference. The plan of treatment he adopts is rest, free evacuation of the bowels, hot fomentations or the ice-bag, with the addition, in chronic cases, of repeated blistering over the tumor. He strongly supports the method of treatment by the administration of full doses of sulphate of magnesium which was advocated by a recent American writer, Dr. W. T. Dodge.—*Birmingham Medical Review*, No. 157, 1891.

CASE OF TRAUMATIC ABSCESS OF THE LEFT ANGULAR GYRUS WITH CROSSED AMBLYOPIA AND WORD-BLINDNESS TREATED BY OPERATION.

DR. BEEVOR and MR. HORSLEY communicated the following case to the Ophthalmological Society of London: F. L. sustained an injury to left side of head last Christmas. Three weeks after accident he became unconscious, and had a general "fit." Six weeks after accident eyesight began to fail, and he vomited daily. He was admitted to the Hospital for Paralysis on March 9th with double optic neuritis and right hemianopsia. There was a seam three inches long along left side of head, which was tender and adherent to underlying parts. Abscess in left angular gyrus was diagnosed, and Mr. Horsley operated. He found fracture of skull with necrosis corresponding to scar. On trephining, an abscess was found in the upper part of the angular gyrus and the outer surface of the occipital lobe. After the operation the boy had word-blindness, and on measuring the fields of vision the right was found to be contracted on the nasal side to twenty and on the temporal side to five, while in the left eye the nasal was reduced to ten and the temporal to fifty. Hernia cerebri developed and was removed, soon after which the boy died. Post-mortem: The dura mater was found to be thickened and adherent on left side to the margin of the silvian fissure as far forward as the ascending parietal convolution, to the lower two-thirds of the supra-marginal gyrus, to the posterior part of the superior and middle temporo-sphenoidal convolutions. The whole of the angular gyrus, except the upper fourth and anterior part of the outer occipital region on the horizontal section was much softened, extending across the hemisphere to the hernia cerebri.—*Medical Press*, 1891, No. 2742.

BLACK URINE AND BLACK ASCITES.

SENATOR (*Charité-Annalen*, xv., S. A.) states that a number of different pigments, having in common only their black color, have been included in the common designation, "melanin." He has recorded a case, in which the dark brownish-red urine, becoming darker on standing, responded to the test

with potassium chromate and sulphuric acid, but at the same time contained considerable indican, to the presence of which the intensification of color is to be ascribed. The autopsy revealed the absence of melano-sarcoma. Derivates of biliary pigment in the urine may simulate melanin. It cannot, therefore, be concluded that a melanotic tumor exists if the urine reacts to chromic acid. All melanotic tumors are not attended with elimination of melanin in the urine. It should be borne in mind that the urine of patients with melanotic tumors may contain melanin and yet not react to chromic acid. Bromine water and chloride of iron differentiate melanogen from indican; the latter reacts to neither. In a case of extensive melanosis Senator observed, in addition to melanuria, the evacuation of dark-brown ascitic fluid, which after standing a few days precipitated a dark sediment. The pigment reacted to bromine water in the same manner as that obtained from melanotic urine. In the latter the pigment was present principally as melanogen; in the former, as melanin. The urine passed by four rabbits, into whose peritoneal cavities melanin from melanotic tumors had been injected, contained considerable indican, but no melanogen—it did not become darker in color on treatment with bromine water.—*Centralblatt für die medicin. Wissensch.*, No. 13, 1891.

KERAUNO-NEUROSES.

FRANKL-HOCHWART (*Zeitschrift für klinische Medizin*, Bd. xix., H. 5 u. 6, 1891) places among the traumatic neuroses the condition, attended by peripheral palsies, that obtains in persons who have been struck by lightning, to which he applies the designation kerauno-neurosis, and of which he reports two illustrative cases. One is that of a cook, twenty-four years old, without nervous antecedents and with no history of syphilis or alcoholism, who, while at work during a rain-storm, was without premonition struck to the ground. On returning to consciousness, two hours later, the course pursued by the current was indicated by large blisters on the surface of the body. A sense of burning pain was felt in the chest and in the occipital region. There were paresis of the extremities, dyspnoea, and defective speech. For one day vision was abolished. From time to time lancinating pains were felt in the upper extremities, especially in the right. Severe sacral pain was a prominent manifestation. In the course of several days complete palsy of the lower extremities developed; the upper became paretic. Diplopia occasionally manifested itself. Sensation was benumbed on the right side. In the course of three months some power of locomotion was regained, though restoration was never complete. The mental condition was depressed. Speech was slow. A little less than five years after the accident, the woman was suddenly seized with vertigo, headache, and vomiting. She lay in bed, was apathetic, and slowly replied to questions. The sense of smell was found blunted on the left, absent on the right. The sense of taste appeared impaired on the left. The pupils were equal, moderately dilated, and prompt in reaction. The fundus was normal, but the fields of vision were contracted. Punctures were imperfectly recognized on the left half of the face. The gait was fairly good for short distances. If, while standing or walking the eyes were closed, decided swaying occurred. Muscular power was dimin-

ished in all four extremities. The movements of the upper extremities were slightly ataxic. The knee-jerks were exaggerated, but there was no ankle-clonus.

The second case was that of a railroad watchman, fifty-eight years old, also without neurotic antecedents or a history of syphilis or alcoholism, who, during a storm, when about to manipulate a telegraph instrument, saw a blue flash and felt a severe shock in the right hand; the right arm fell to his side, and a sudden pain was felt to dart through the right arm and leg, which for ten minutes were powerless, and for three days remained cold and stiff. This sensation of cold reappeared subsequently once or twice a month for several hours. Some two years later the man was seized with severe pain in the right leg that lasted for two weeks, when it moderated—recurring, however, from time to time in both arm and leg. Vision became impaired and muscular power on right side diminished. Convulsions frequently occurred in the right leg. Occasionally there was intense sacral pain. Memory became impaired. The right pupil was smaller than the left; the reactions were tardy. The fundus was normal, though the fields of vision were contracted. There was slight tremor of the tongue. The circumference of the right lower extremity was smaller than that of the left. The right leg was dragged in walking. The station was good. When the eyes were closed there was some ataxia of movement of the right upper and lower extremities. The tendon reflexes were exaggerated.

UNILATERAL PALSY OF CEREBRAL NERVES DEPENDENT UPON CARCINOMA OF THE BASE OF THE SKULL.

STERNBERG (*Zeitschrift für klin. Medicin*, 1891, Bd. xix., H. 5 u. 6) has reported the case of a woman, fifty-seven years old, with no diathetic family history, who had borne seven children, and in whom the menopause had taken place seven years previously. For a year there had been a vaginal discharge, with emaciation. Headache, especially frontal and occipital, and on the right side, had been complained of for two months. In the previous six weeks it had been noticed that the hearing upon the right side was impaired, and that diplopia manifested itself when the eyes were directed to the right. For fourteen days speech had been defective and there was some difficulty of deglutition. The headache became aggravated in intensity; the pain assumed a lancinating or boring character, but occasionally remitted. Food would sometimes be regurgitated through the nose. The head was somewhat inclined to the right. The folds of the forehead, of the eyes, and of the nose and upper lip, were less well defined on the right than on the left. The right angle of the mouth drooped; from it saliva occasionally dribbled. The pupils were equal and reacted to light, and with accommodation. All the movements of the eyes were well performed, except that of the right eye outward; as a result there was homonymous diplopia. Vision was otherwise unimpaired; no lesion of the fundus was found. The conjunctival reflex was absent, the corneal reflex present on both sides. No olfactory defect was detected. The right half of the forehead displayed a diminution of sensibility to touch, temperature, and pain. The skin of the face was otherwise hyperalgesic. On opening the mouth the point of the

chin deviated to the left. In gritting the teeth, the right masseter acted but imperfectly. The right side of the head, especially in the region of the mastoid process, was sensitive to percussion. Sudden pressure upon the vertex, as well as rapid lateral movements of the head, caused pain. The tongue protruded and deviated to the right. The right half of the tongue was considerably smaller than the left, and occasionally displayed fibrillary contractions. At rest, the uvula and soft palate were symmetrical and median in position. Upon intonation the right side moved less than the left. Irritation of the right half of the soft palate induced retching less readily than irritation of the left half. The sensibility of the cheek and of the right half of the tongue was unaltered. Taste was imperfect on the anterior part of both halves of the tongue, but decidedly impaired upon the posterior part of the right half. Vaginal examination disclosed the presence of a hard, nodular, disintegrating mass, involving the vaginal portion of the uterus and the posterior and anterior walls of the vagina. The uterus was enlarged and fixed. A diagnosis of carcinoma of the uterus, with metastatic deposits at the base of the skull, involving the right cerebral nerves, was made. The symptoms grew progressively worse; the palsy of the tongue became complete, but improved temporarily in response to faradic stimulation; death, however, ultimately ensued.

At the autopsy a small new-growth was found at the apex of the petrous portion of the right temporal bone, involving the Gasserian ganglion, the commencement of the trigeminal nerve, and the sixth nerve, and partially occluding the internal auditory meatus. The facial and auditory nerves appeared thickened and reddened. The glosso-pharyngeal was surrounded by an extension of the growth, and was also swollen and reddened. At the margin of the foramen magnum, especially about the anterior condyloid foramen, the dura was the seat of a thin layer of growth that surrounded the hypoglossus, which was thickened and reddened. The lateral sinus contained a whitish-red coagulum that was continued into the jugular vein. A metastatic growth was found on the left eighth rib two fingers' breadth external to the chondro-costal junction. The small pelvis was occupied by a large adherent tumor that proved to be carcinomatous, originating from the posterior vault of the vagina.

COMPARATIVE STUDIES OF THE PARASITES OF THE RED BLOOD-CORPUSCLES.

In an endeavor to determine the relation of the parasites found in the blood of lower animals with those found in the blood of man, CELLI and SANFELICE (*Fortschritte der Medicin*, 1891, Nos. 12, 13, and 14), availing themselves of the material offered by the Roman Campagna, extended their investigations to a large class of animals, both cold-blooded (frogs, tortoises) and warm-blooded (birds, man). Daily examinations of the recent blood were made, the same method being always employed. The blood was imbedded in paraffin kept at the temperature of the room, or in a thermostat at 98.6°. Dry preparations were stained with iodine-hematoxylon, fresh preparations with methylene-blue dissolved in ascites fluid.

Celli and Sanfelice succeeded in finding in the blood of frogs and tortoises

both intra-corpuseular and free parasites, that differed in different kinds of animals. Inoculation experiments from frog to frog were not encouraging. Injections into the pulmonary artery of blood in which sporulation was going on were followed in one of three frogs by the appearance of small and medium-sized parasites. Similar injections into the cavity of the heart succeeded in but one frog. In both cases a doubt existed whether the parasites found might not have existed previously, but have been latent. Inoculations from tortoise to tortoise, and from frogs to other animals, were also less successful.

Observations were made upon two hundred birds. It was at once evident that the intra-corpuseular parasitism was in them more complete than in cold-blooded animals, that is, in birds the parasites have a more intimate intra-corpuseular existence, and live at the expense of the hæmoglobin, which they convert into melanin—as a result of which they display black pigment granules. Besides this, several varieties of parasites may be found in the same animal. Some of the parasites are of slow, some of accelerated, and others of rapid development. Those of the first kind are extremely resistant.

As a result of inoculations from one bird to another of blood containing “medium-sized,” “large,” and “free” forms, it was found that the parasites of the red blood-corpuseles are reproduced (but not always) in animals inoculated with the blood of animals of the same kind and variety. They have either a certain degree of individualized existence, and a special acclimatization for each variety, so that forms that appear morphologically identical are perhaps not parasitologically so, or the nutritive substratum, *i. e.*, the faculty of immunity, is not alike in all individuals of one and the same variety.

Celli and Sanfelice divide the malarial fevers of Rome, as seen in man, into two groups—mild and severe; or, winter-spring and summer-autumn. These again may be (a) quartan (combinations of which are represented by the double and treble quartan or triquetan quotidian); (b) tertian (double tertian or bitertian quotidian); (c) quotidian (fever with protracted attacks, subsistent, subcontinuous and pernicious fever). To each of these main types correspond various forms of parasites morphologically and biologically distinct. The cycle of development may be abbreviated; thus arise anticipating tertians and quartans.

In the fevers of quartan type the intra-corpuseular cycle of development is completed in three days. At first there appear small, amœboid forms, which rapidly become pigmented; then there are to be seen round, slightly pigmented, slightly motile masses, which neither protrude nor withdraw pseudopodia, with tardy movement of the black granules; they grow until they occupy the entire red cell, without deforming it, but taking up its coloring matter. Sporulation takes place in the adult parasite by the formation of a rosette of from nine to twelve spores about a collection of pigment; exceptionally it occurs as a premature development of at most from six to eight spores in the not entirely occupied red corpuscle. The free phase has but little significance. While a greater or smaller number of adult forms undergo sporulation, others (less commonly than in tertian and quotidian) become free in the plasma and degenerate, the pigment losing its motility, and the forms disintegrating or extending flagellæ that slowly oscillate. By their slowness

of development, and their slight degree of motility, as well as by the preservation of the red blood-corpuscles, these forms remind one of those of slow development in birds.

In the fevers of tertian type, there are at first small amœboid forms that grow and become laden with pigment, while they remain in active movement; the pigment-granules, which are usually fine, are also in active movement; the blood-corpuscle swells, the hæmoglobin is altered, losing its color, or becoming the color of old brass. Sporulation may take place prematurely in the medium-sized forms, and more frequently in the large forms that occupy the entire blood-corpuscles; in such a case there is an aggregation of from fifteen to twenty spores, and in the other of from fifteen to twenty surrounding the mass of black pigment usually in the centre. The adult forms that do not undergo sporulation, and that pass from the red corpuscles into the plasma die, *i. e.*, they become larger, apparently hydropic, present vacuoles, extend flagellæ, and extend masses with granules in active movement. The analogy with the form of moderate rapidity of development in the lark is striking; amœboid movement only is wanting.

In fevers of the true quotidian type there are at first small intra-corpuseular forms, with active amœboid movement, which become round and pigmented immediately before the onset of a new paroxysm; the pigment is collected at the centre, and the surrounding parasitic mass breaks up into spores. Fortunately all do not undergo sporulation—a portion die in the shrunken red blood-cell that has become brass-colored; others continue to grow, remaining round and becoming free; more frequently they become extended, and distribute themselves at the periphery of the red blood-corpuscle; they continue their extension, and curve round to form crescents. Meanwhile the red blood-corpuscle has become paler, and finally disappears; at most there remains a margin at the concavity of the crescent, and almost always a layer of hæmoglobin surrounding the parasitic mass. Recent observations have failed to confirm the occurrence of sporulation. The crescents degenerate more slowly at ordinary temperatures than in the thermostat, while those of the rapid cycle, which have begun to sporulate in the circulating blood, complete their sporulation. The crescents become egg-shaped or round; the movement of the pigment-granules may be very active, but only very rarely are flagellæ extended. In the course of from five to ten days, sometimes earlier, the phases of another kind of degeneration may be observed. The red blood-cell in which the parasite develops again becomes more distinctly visible; the layer of hæmoglobin surrounding the parasite disintegrates, and then the parasite itself disintegrates. Thus, pale fragments of the red blood-corpuscle with the hæmoglobin-colored parasite-mass, and with accumulated or disseminated pigment-granules, may be seen. The hæmoglobin-colored crescent may also be seen immediately after the removal of the blood—from which it must be concluded that the degeneration has taken place in the circulating blood. Slowly the hæmoglobin color fades, and of the whole mass only the black granules remain.

Inoculations with blood containing crescents and parasites in sporulation respectively were attended with negative results. Inoculations with splenic fluid obtained several hours after death from cases of pernicious fever of two spleenless guinea-pigs, two normal guinea-pigs, two spleenless white rats,

three normal white rats and two kept on ice, a porcupine and a bat, two doves, two turtle-doves, and numerous frogs and tortoises and other cold-blooded animals, were all negative.

In the various classes of vertebrates, the parasites considered have the following common characters: 1. *A seat in the red blood-corpuscle*, in which they remain during the entire intra-corpuscular stage, which may normally advance to sporulation; those forms that after a longer or shorter residence in the red blood-corpuscles do not undergo sporulation, have a more or less short free stage in the plasma. So that the analogy, but not the identity, of the various intra-corpuscular parasites in the various animals, would be the following: For the intra-corpuscular stage, between the respective small, medium-sized, and large forms, to the stage of sporulation in batrachians, reptiles, birds, and man; for the free stage, in the blood-plasma between the drepanidium of batrachians and of reptiles, the free forms in the blood of birds, the quartan, tertian, and quotidian preceding the free phase; the forms that do not sporulate have an intermediate stage of intra-corpuscular existence in which the forms correspond in the various animals examined. 2. *Endogenous reproduction through gymnosporos* without preceding encapsulation. 3. *A structure composed of two substances*, of which one takes up much and the other little color, and a vesicular nucleus.

One differential character resides in the fact that in cold-blooded animals the hæmoglobin is not reduced, and, as a rule, the red blood-corpuscle is not destroyed. In birds and in man, on the contrary, the blood-parasites are sustained at the expense of the hæmoglobin, which is converted into melanin—whence results the melanæmia. Ascending from the lower animals to man, the free phase in the plasma is seen to progressively diminish, and the intra-corpuscular stage to increase in importance; at the same time, the parasitic activity increases in correspondence with the rapidity of reproduction. In man, before sporulation takes place, all forms display active amœboid movement, of which only indications are present in lower animals. The relationship between the parasites of birds and those of man is so close that the forms of slow, rapid, and accelerated development correspond with the quartan tertian, and quotidian.

Celli and Sanfelice are unwilling to state whether or not various forms represent a single variable parasite or definitely different varieties. All of the intra-corpuscular organisms are conceded to be sporozoa, divisible into three classes: 1. Gregarina; 2. Myrosporidia; 3. Sarcosporidia; to which may be added a fourth—hæmosporidia. The last are characterized not only by their seat in the red blood-corpuscle, but also by their mode of development. In addition to the differences in the developing and the adult forms, the hæmosporidia do not become encapsulated before they form spores, and their spores contain no sickle-shaped bodies, as do the coccidia and gregarina, nor polar bodies, as do the myrosporidia. Hæmosporidia may be divided into three genera: Hæmo-gregarina (batrachia and reptilia); hæmo-proteus (birds); plasmodium (man). The chief characteristics of the three genera are respectively as follows: 1. Inability to reduce hæmoglobin and to destroy the red blood-corpuscle; the free stage in the blood-plasma is well organized and reminds one of free gregarina. 2. Conversion of hæmoglobin into melanin; the free stage is insignificant. 3. Active amœboid movement preceding sporulation.

SURGERY.

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 THE OPERATIVE TREATMENT OF THE ENLARGED PROSTATE.

KEYES (*Medical Record*, vol. xl., No. 18) arrives at the following conclusions in regard to the treatment by operation of prostatic hypertrophy:

1. Prostatectomy is justifiable, and does what nothing else can. 2. The perineal operation is somewhat less severe, but decidedly less reliable than the supra-pubic; it should rarely be preferred, unless there be urethral complications. In very feeble men it may still be elected. 3. The operation is not justifiable, with present statistics, if the patient can be comfortable in catheter life. 4. No physical condition of the parts or of the patient short of a practically moribund state contra-indicates operation. By it in desperate cases life is often actually saved, although the operation is a grave one and its mortality high. 5. With the rongeur—better than any instrument—the bladder outlet can be lowered, and polypoid or interstitial growths jutting into the prostatic sinus can be removed, and these points are more essential to a successful operation than is the taking away of a large portion of the prostatic bulk. The instrument next in value is the curved scissors, but the skilled finger is most important of all. Most of the work has to be done by the aid of touch, as the bleeding soon becomes free and renders visual inspection impossible. 6. Diuretin, perhaps, is of value when the kidneys are damaged. It certainly does no harm. 7. Chloroform alone should be used as an anæsthetic, for the sake of the kidneys.

 ACTINOMYCOSIS HOMINIS.

DR. JOHN B. MURPHY (*North American Practitioner*, vol. iii., No. 12) reviews the history of actinomycosis, 251 cases of which have been reported up to January, 1891, adds 5 cases of his own, and comes to the following conclusions:

1. The treatment consists of a radical extirpation of the entire mass, as can frequently be done in a case where the lower jaw is attacked primarily and where the disease has become detached from the bone by the reparative process, as in one case of mine, and in many reported by other observers. Where radical extirpation is impossible curetting is very efficient, if care be

taken to follow all sinuses to their extreme ends. As this disease attacks the muscle or bone only superficially—*i. e.*, the periosteum and the inter-muscular, connective, and fatty tissues—it can be removed without any considerable amount of destruction of these tissues by the curette. The surrounding tissues are thoroughly protected from injury by the diffuse induration which extends far beyond the site of coagulation necrosis. The walls of the vessels stand out for several inches with all the surrounding tissue eaten away. They should be ligated at both ends and cut out, otherwise they are liable to rupture and cause fatal hemorrhage. Simple drainage of an actinomycotic cavity is not sufficient, as the germs continue to invade the walls, and many sinuses are found leading from the cavity and forming new foci, which are not drained. The limit of invasion can be recognized by the golden-yellow or orange-colored slough produced by the disease; this is particularly well marked where suppurative infection is absent. The process of repair after operation is very rapid. So far, medical treatment has been of no avail. The vast majority of cases, not accessible to surgical eradication, terminate fatally, the exceptions being rare cases where the disease seems to die of inanition.

2. The growth of the disease is very indolent and sluggish, except in the peritoneal cavity. 3. It is accompanied by very little pain. 4. The microbe does not produce a ptomaine that has the effect of causing an elevation of temperature. 5. Pure infection by the actino-cladothrix is not accompanied by pus. Pus is present only after a secondary infection with the streptococcus pyogenes. 6. The amount of infiltration around each nodule of granulation and its sero-purulent contents is very great compared with small contents. 7. The greater the amount of suppuration the more malignant and rapid is the progress of the disease. 8. Diffusion of the actinomyces *in loco* or by entrance into the blood-stream is the mode of extension—never along the lymphatics and glands. Its extension is greater in opposite directions to the course of lymphatics. 9. After evacuation of contents the nodule heals rapidly, but in a few weeks or months reappears, if all germs were not removed. 10. Fatal symptoms are very tardy in appearing, due principally to the very great connective tissue infiltration, barring the progress of the disease.

THE TREATMENT OF ABDOMINAL WOUNDS.

MICHEL WASSILIEFF, discussing the treatment of these wounds (*Revue de Chirurgie*, 1891, No. 11), says: "The position of the surgeon is very difficult in doubtful cases. How shall he act when he is ignorant of the condition of the viscera? To make a laparotomy immediately is a serious step, perhaps useless, for the viscera may not be injured. On the other hand, to postpone operation and wait for more serious symptoms is to endanger the life of the patient." He then quotes Augagneur, who claims that the three dangers to life—internal hemorrhage, shock, and peritonitis—do not justify laparotomy, the first and second because they may of themselves cease, and the third because it has no definite symptoms, for those usually ascribed to it may be due to shock. The grounds on which Reclus and Nogués justify operative interference are as follows: Internal hemorrhage; issue of fecal matter and

gas from the wound or the distending of the abdomen by gas; and symptoms of peritonitis. They would prefer systematically no operation to always operating immediately, supporting their opinion by statistics. With no operation they find a mortality of 12 per cent. in punctured wounds and 25 per cent. in gunshot wounds, against 24 and 63 per cent., respectively, where there was operative interference. Wassilieff says, however, that the majority of surgeons prefer operating, and that promptness has much to do with success. He cites six cases of his own, four of which recovered without fever after laparotomy, washing with a 1:8000 sublimate solution, and tamponing with iodoform gauze. All were punctured wounds, with injuries of the viscera. The fifth and sixth cases—both without early dangerous symptoms, one a punctured wound, the other a contusion—died without operation, and section showed peritonitis due to wounds of the viscera. These cases lead him to believe that in all cases where there is a perforating wound—or, as he puts it, where a laparotomy has been begun—it should be completed; but he finds it difficult to decide the question in cases of contusion such as the last. Where there exists the least suspicion of a visceral wound he advises immediate operation. He says: "Certainly we would have obtained better results in these last two cases by operating, and therefore my advice is, that it is better to operate without finding visceral lesions rather than commit the fault of neglecting a case that has internal injuries."

He discredits the authority of the statistics quoted, both on the ground of the period that they cover, and also the unwillingness of operators to report unfavorable cases.

TREATMENT OF SOME DISLOCATIONS OF THE ELBOW.

STIMSON (*New York Medical Journal*, vol. liv., No. 17) calls attention to an error very commonly made in the examination of old unreduced luxations of the elbow. This consists in mistaking certain outgrowths of bone which appear promptly after dislocation for displaced fragments, or exuberant callus in fracture. The surgeon, supposing the lower end of the humerus to be irretrievably deformed, refrains from attempting what he supposes to be an impossible reduction. In reality the articular surfaces have undergone no change in shape, and so far as they are concerned a restoration of the normal relation is possible. In these cases reduction of the dislocation and restoration of function are absolutely impossible excepting by an arthrotomy with removal of the bone outgrowths.

Eight cases are recorded, six of whom underwent operation. In all but one case the dislocation was backward. In one it was backward and upward. The age of the dislocation varied from three weeks to five months. In all, flexion and extension were entirely, or almost entirely, lost, the limb being fixed at an angle of about 145 degrees. Rotation of the forearm was preserved in all but one. The feature of interest was the prominent mass of bone seen and felt above the displaced head of the radius and continuous with the back of the external condyle. This mass was broadly attached to the back of the condyle, and its free end extended forward, almost completely covering the upper surface of the radius and forming a new articulation with it. The

shape of this mass and its relations to the head of the radius suggested that it was the fractured and displaced capitellum; the operations, however, demonstrated that it was a new growth, the lower articulating end of the humerus being complete and unchanged in form or in cartilaginous covering. Where the dislocation has lasted for many years masses of new bone have been observed at other points above the joint, but these are apparently produced by ossification of the capsule. The method of operation was to expose the region by two lateral incisions; the first incision was made on the outer side, beginning well up on the supinator ridge and passing downward across the head of the radius, and then for an inch or two along the interval between the radius and ulna; the new growth of bone was exposed at the upper part of the incision, denuded, and cut away with a chisel; the outer aspect of the external condyle was freed by means of division of its fibrous attachments to the radius and ulna, the periosteum not being detached until the articular surface of the capitellum was exposed. By drawing apart the sides of the upper portion of the wound the olecranon was bared, the fibrous mass filling the sigmoid cavity being then cut away. The second incision was made on the inner side; it was about four inches long, curved concavely forward, and so carried close behind the epicondyle. The ulnar nerve was first drawn aside, and then the fibrous bands connected with the condyle and olecranon were divided. The epicondyle had been broken off and reunited to the humerus at a higher level; it was cut free and turned back without dividing the attached internal lateral ligament. The division of the attachment was carried downward until the articular surface of the trochlea was exposed. The dislocation could then be readily reduced. The dissection should not be sub-periosteal, for otherwise the subsequent nutrition of the cartilage of incrustation may be impaired.

In long-standing cases the flexor muscles arising from the internal condyle may have become permanently shortened, and may require separation from the humerus. When the wound is dressed the elbow is flexed nearly to a right angle. After healing, the arm is supported in a sling and the patient encouraged to use the hand, and finally the elbow, in acts that require the exertion of but little force. As a result of this operation the bones have been permanently restored to their places, and more or less freedom of motion has been regained. In all, rotation of the forearm has been preserved. In three the range of flexion and extension was very well within the right angle to nearly complete extension. In one it was about 45 degrees at the end of two and a half months and was increasing; in another it was about the same at the end of three or four weeks, when the patient was lost sight of. It is sufficiently evident that in these cases reduction without a cutting operation is impossible.

LAPAROTOMY FOR GUNSHOT WOUNDS OF THE ABDOMEN.

RAMSAY (*Annals of Surgery*, vol. xiv., No. 4) publishes a successful case of laparotomy for gunshot wound of the abdomen. The patient was shot at close range by a 22-calibre pistol. The bullet entered just below the xiphoid appendix four-fifths of an inch from the linea alba. He was seen by the surgeon an hour after the accident, and at that time suffered from neither pain nor shock. There was no tenderness or tympany. Three hours after the acci-

dent laparotomy was performed. The right lobe of the liver and the stomach in its inner curvature were found wounded. The liver wound was bleeding; hemorrhage was stopped by placing two sutures on either side of the wound; the stomach wound was closed by a suture. The intestines were examined and found to be uninjured. The patient made an uninterrupted recovery.

Ramsay particularly insists upon the importance of early operation, and upon the necessity of completing the operation as quickly as possible. He discards the hydrogen-gas test, not because it is without utility, but because it consumes time, and thus often postpones operation. He believes that evisceration enables the surgeon to more readily explore the intestinal tract, and exposes the patient to less danger than when the search is carried out in the abdominal cavity.

DRAINAGE OF WOUNDS, WITH SPECIAL REFERENCE TO DRAINAGE FOR URETHROTOMY.

KINLOCH (*Annals of Surgery*, vol. xiv., No. 4), after a careful discussion of this subject, formulates the following conclusions:

1. Urethrotomies for stricture of the penile portion of the urethra, including the meatus, require no artificial drainage. In case the urine is healthy, the natural passage of this is sufficient to prevent lodgment of blood or inflammatory exudates and subsequent decomposition, putrescency, and sepsis.

2. To insure against the action of unhealthy urine the secretion must be modified before resorting to operation, by the use of proper medicinal agents known to be efficient for this end. The bladder must also be treated, as a preliminary, when its condition is such as to furnish diseased elements which give deleterious character to the urine.

3. If deemed necessary further to guard against the noxious character of the urinary secretions, the catheter *à demeure* must be resorted to for draining the bladder for forty-eight to seventy-two hours. The rigid English gum catheter is to be preferred to the soft rubber one, as less likely to be displaced.

4. After internal urethrotomies of the deep portion of the urethra drainage is most essential. This cannot be properly secured by the mere use of the catheter, and, therefore, it is best to abandon such operation and to substitute for it a perineal section or external urethrotomy.

5. After this latter operation drainage goes on securely because of the direct external opening. It should, however, be more thoroughly insured by a perforated drainage-tube, reaching from the meatus, and made to project through the perineal wound; this is kept in place from three to five days.

6. Bladder drainage, after perineal urethrotomy, is not essential if the urine is healthy. By the voluntary efforts of the patient the urine flows readily from the bladder and escapes through the perineal wound.

7. To better insure the escape of urine, however, through the perineal wound, and also prevent its contact with all lesions of the canal, a short tube, of large calibre and rigid walls, may be passed into the bladder from the perineal wound and kept in position by a suture passed through the tegumentary edge of the wound. This tube may be removed after three days.

8. The use of non-irritating, antiseptic injections through the tube occupying the canal furnishes an additional precaution against sepsis. The bladder may also be easily washed out by means of the tube used for draining it through the perineum.

CHOLEDOCHO-DUODENOSTOMY.

With this name SPRENGEL (*Archiv für Chirurgie*. Bd. xlii. Heft 3) endows an operation which he successfully performed upon a man aged forty years. He gave a history of having suffered for many months with sharp pains in the region of the liver. These were accompanied at times with slight icterus. The abdomen was opened by an incision running along the outer side of the rectus muscle, exposing the liver. The gall-bladder was found filled with fluid, but not very greatly enlarged. It contained no stones. A gall-stone was found, however, in the canal which seemed to open immediately beyond the position of this stone into a comparatively large cavity. In the belief that symptoms were caused by an impacted gall-stone in the common duct just as the latter enters the duodenum, the calculus was by the exertion of some force pushed forward until it seemed to enter the bowel. The wound healed kindly, but no gall-stone was found in the passages from the bowels. In three weeks the symptoms noted before operation were renewed. Another operation was decided upon. Extensive adhesions were encountered at the seat of the former manipulations. The gall-bladder was again found to be free from stone, but in the position where the calculus was found before another hard body could be detected. By careful dissection it was determined that what was supposed to be the duodenum was in reality the enormously dilated ductus communis choledochus, and that, therefore, the stone had not been pushed into the duodenum, but simply into this dilated pouch. The stone was found occluding the entrance of the duct into the duodenum. It was crushed and pressed backward into the gall-bladder. The latter viscus was freed from its attachment to the liver and removed. A second stone was removed from the hepatic duct and an opening was formed between the common duct and the duodenum. At first by superficial sutures the surfaces of these two structures were brought in apposition; the cavity of each was then opened and the suturing was carried around these incisions. A continuous mucous suture being first placed, this was reinforced by peripheral serous stitch. The abdomen was closed without drainage, the patient made a prompt recovery, and in three months had gained twelve pounds. The symptoms from which he suffered formerly disappeared entirely.

AN APPARATUS FOR THE TREATMENT OF CLUB-FOOT.

KIRCHHOFF (*Zeitschrift für orthopädische Chirurgie*, Band i., Hefte 2 u. 3) gives a mechanical device for the treatment of club-foot, but especially applicable to that form described by Shaffer, of New York, as "non-deforming club-foot," which is characterized by the extreme arching of the plantar surface at the metatarso-phalangeal articulation, and the dorsal flexion of the toes.

The apparatus consists of a metallic sole, ten and a half inches long and two and a half to three inches wide, the heel being separated from the sole

by deep notches, to admit the passage of a bandage over the instep. A perpendicular plate, adjustable to the side of the foot, is attached by thumb-screws to this sole. Beneath it is a bar, connected to it by screws in such a manner that a figure-of-eight bandage, passed about the ankle and encircling the instep and this bar, can be made to exert a strong pressure by tightening them. To apply the instrument the sole is placed upon the foot, a pad of felt intervening in order that the foot may move on the sole in an antero-posterior direction; the perpendicular side-piece is adjusted to the inner side of the foot and fastened to the sole, so that the foot may not move laterally. Then a Martin's bandage is applied in a figure-of-eight form, including the ankle, the instep, and the bar beneath the sole, and passing through the notches in the sides of the sole and the perpendicular side-piece; over this a strong bandage is applied, and then pressure exerted by means of the bar and screws.

The Martin's bandage equalizes the pressure and prevents damage to the soft parts, and although the toes may become cyanosed, the circulation will be reëstablished by the veins of the plantar fascia after slight muscular movements of the foot.

The application of pressure should be made gradually, with intermissions of a minute, the amount of pressure varying with the severity of the deformity and the endurance of the patient. These applications should be made at first daily, or even two or three times a day, lasting for five, ten, or fifteen minutes; later, twice a week, and finally once a month. A sandal is worn in the meanwhile, continuous pressure being exerted upon the instep to retain the foot in the position secured by the use of the instrument. Where the patient cannot be seen every day, an instrument similar to the first may be worn, but without the tightening apparatus, a Martin's bandage being applied rather firmly, and retained as long as the patient can bear it.

Kirchhoff also thinks the apparatus of great service in the treatment of other forms of club-foot, as a means of holding the foot firmly and bending it in the required direction.

ELECTRO-CYSTOSCOPY.

LEWANDOWSKI (*Wiener Klinik*, Dec., 1891, Heft 12) has collected 24 cases of tumors of the bladder diagnosticated by the aid of the cystoscope, comprising 12 papillomata, 4 hæmatomata, 5 carcinomata, 2 fibro-miomata, and 1 polyp. All were removed but one carcinoma, the patients recovering, and one carcinoma being followed by return *in situ*. He also gives the following cases of foreign bodies diagnosticated by aid of the cystoscope, and removed either by supra-pubic cystotomy, through the urethra by the use of a lithotrite, or by lateral cystotomy: Two entire Nélaton's catheters, and the tip of another one; an entire bougie, No. 22; a large pin, found sticking in the bladder-wall; a hairpin, in a female; a stone having as its base a silk ligature, and also in the same case a silk ligature that had ulcerated its way from the stump of an ovariectomy into the bladder; and a large part of a sealing-wax sound that had been manufactured and broken off in the urethra by a patient with stricture.

All of these cases, he claims, could not have been diagnosticated except by the use of the cystoscope, and are proofs of its great usefulness for this purpose.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF
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DISEASE OF THE ETHMOID CELLS.

DR. BOSWORTH recognizes (*N. Y. Med. Journal*, No. 675, 1891) five varieties: Myxomatous degeneration without purulent discharge; extra-cellular myxomatous degeneration with purulent discharge from the ethmoid cells; purulent ethmoiditis with nasal polypi; intra-cellular polyp without pus discharge; and intra-cellular polyp with purulent discharge. Illustrative instances are given under each variety.

PRESUMPTIVE NASAL TUBERCULOSIS IN A MONKEY.

DR. E. L. SHURLY reports (*N. Y. Med. Journal*, No. 675, 1891) a case of nasal tuberculosis in a spider monkey, as determined by the presence of numerous bacilli in the discharges. When actively treated with inhalations of chlorine gas and sodium chloride water the bacilli disappeared, to reappear whenever the treatment was discontinued for a week. After the animal had been killed, microscopic examination did not reveal evidence of tuberculosis anywhere, not even in the turbinate bones, although all the bony parts of the nasal passages were softened. The details of the examinations of the organs are given. Dr. Shurly concluded that the presence of tubercle bacilli is not alone an infallible sign of tuberculosis.

TONSILLITIS.

MR. GEORGE HEATON reports (*Birmingham Med. Rev.*, No. 159, 1891) an instance of tonsillitis in which, apparently, an abscess formed which corroded the internal carotid artery just before its entrance into the skull, producing fatal hemorrhage despite ligature of the common carotid just above the clavicle. There was a clinical history of quinsy, with sudden and profuse hemorrhages from nose and mouth, and subsequently from the ear. There was an ill-defined pulsating swelling on the left side of the face and neck. The left tonsil was pushed considerably beyond the middle line, and the soft palate bulged forward especially on the left side so as almost to touch the tongue. The swelling was soft and fluctuating, and pulsated synchronously with the external tumor. The mucous membrane was tense and shining. The patient, a male, aged twenty years, had no recollection of ever having had a bad throat before. Two of his sisters had been laid up at the same time with bad throats in the same house.

CEDEMATOUS SORE-THROAT FROM THE USE OF SALOL.

DR. A. MOREL-LAVALLÉE reports (*Arch. Internat. de Lar., de Rhin., et d'Otol.*, No. 3, 1891) an instance of œdematous angina occurring in a young syphilitic woman, and consecutive to an eruption following the topical use of salol in the ear to dry up some secerning erosions.

DIPHTHERIA.

In a series of histologic observations upon membrane removed from a series of cases of primary diphtheria, DRs. WELCH and ABBOT, of the Johns Hopkins Hospital, found (*Johns Hopkins Hospital Bulletin*, 1891) the Klebs-Löffler bacillus present in every instance. Its identification, based upon the study of its morphology, its behavior in various culture media, and its effects when inoculated into guinea-pigs and other animals, showed it to be identical in all respects with the Löffler bacillus in a culture obtained from Berlin.

Electro-cauterization has been practised by DR. HAGEDORN, of Hamburg, in twenty-four cases of pharyngeal diphtheria (*Deut. med. Wochenschr.*, No. 28, 1891), a practice urged by Blobaum at the Fifth Congress for Internal Medicine, in 1886.

INTUBATION IN DIPHTHERIA.

Intubation is thoroughly discussed in a lecture by PROF. ESCHERICH, of Gratz (*Wiener klin. Wochenschr.*, Nos. 7 and 8, 1891), both from the standpoint of personal experience and extensive reports of recent writers. While fully acknowledging its utility in many instances, it is not deemed of equal value with tracheotomy. Exclusive treatment by either procedure is deprecated, the character and location of the lesion in each individual case giving correct indications for choice. Evidence of pulmonary or bronchial implication is regarded as a contra-indication, tracheotomy being preferable no matter how young the patient. Septic infection presents another contra-indication. The cases suitable are those of primary diphtheria limited to the pharynx and larynx, unattended with septic characters, and in which gradually increasing laryngeal stenosis is occurring, with yet intact bronchi and lungs. Even in these cases intubation should be supplemented by tracheotomy on the very first indication of extension of the disease to the bronchi, or on the first evidence of pneumonic infiltration. This pneumonia is attributed rather to difficulty in due ventilation of the lungs than to the result of access of nutriment. Intubation is likewise indicated as a temporary procedure in the presence of alarming dyspnoea when the risk of awaiting the completion of a tracheotomy is too great, and is useful to mitigate the death-struggle in hopeless cases.

INTUBATION IN CROUP.

DR. F. EGIDI, of Rome, reports (*Arch. Ital. di Lar.*, fasc. 3, 1891) his results in 51 cases. One died of shock from the attempt to introduce the tube. Of the remaining 50, 8 recovered. Ten died on the first day, 19 on

the second, 10 on the third, and 3 on the fourth day. During the same period 17 tracheotomies were performed on other patients, with 4 recoveries.

RHINOSCLEROMA.

DR. LEOPOLD LUBLINER reports (*Berliner klin. Wochenschr.*, No. 40, 1891) a case of absorption of the infiltration after typhoid fever. Valuable bibliographic references accompanying the report.

NASAL MYXOSARCOMA.

DR. JOSEF REINHOLD reports (*Internat. klin. Rundschau*, No. 44, 1891) two cases in females sixteen and twenty-three years of age. In both instances the morbid growths sprang from the septum. One was removed after splitting the nose and temporarily resecting the left nasal bone; the other by removing a section of surrounding mucous membrane and the sub-lying perichondrium.

NASAL POLYPI.

In a supplementary paper (*New York Medical Journal*, No. 20, 1891), DR. W. E. CASSELBERRY discusses the radical treatment of myxomata. This consists in thorough cauterization of their points of attachment. Those polypi which proceed from beneath the middle turbinated body are followed up to the hiatus semilunaris by insinuating a fine electrode slightly curved on the flat. Those which spring from the superior meatus posteriorly are reached by a properly curved electrode introduced through the mouth under efficient illumination. Exceptional cases are curable only after removal of the antero-inferior extremity of the middle turbinated body. For this purpose curved serrated scissors are used. When scissors cannot be manipulated, an *écraseur* snare, like the Allen snare, is used, which requires but one hand for its manipulation.

CRESOLIODIDE IN LARYNGEAL AND NASAL DISEASES.

DR. V. SZOLDRSKI reports some experience with eucrophen in Jurasz's clinic (*Münchener med. Wochenschr.*, No. 43, 1891). He finds it a useful agent in hypersecretion, and a valuable disinfectant after operative procedures, the powder adhering to the membrane much more tenaciously than other substances.

STRICTURE OF THE LARYNX.

DR. W. C. JARVIS reports (*N. Y. Med. Journal*, 1891, No. 675) a case of extreme cicatricial syphilitic contraction of the larynx in which respiration was for some three years or more carried on through a minute orifice, which after death, as shown in the specimen exhibited at the last meeting of the American Laryngological Association, barely measured an eighth of an inch in diameter at the level of the ventricular bands, and below which the vocal bands, though thickened and infiltrated, substantially retained their ordinary outlines. The trachea was not diseased. Had tracheotomy been permitted,

as strongly urged by Dr. Jarvis, the patient's life would doubtless have been saved. The chief clinical features of the case are the capability of respiration through an aperture theoretically insufficient for the purpose, and the fact that death under such conditions may be due to exhaustion, and not to strangulation.

FRACTURES OF THE LARYNX.

In an article based upon experimental researches upon fractures of the cricoid cartilage (*Gaz. Hebdomadaire*, No. 42, 1891), Dr. ZILGIEN, of Nancy, states that an ossified cartilage requires considerably less force to sustain a fracture than does a cartilage which has simply undergone amiantaceous degeneration. This degeneration of hyaline cartilage precedes ossification and calcification, and is characterized by fine striations in the hyaline substance. If the hyaline structure is intact, the cartilage cannot be broken. It bends, owing to its irresistible elasticity due to its perfect homogeneity and the thick layer of perichondrium in which it is enveloped.

Experiments were made upon the exposed larynges of cadavers, by exercising slow pressure with the aid of a dynamometer and gradually increasing the pressure until fracture was produced. The pressure requisite to fracture the thyroid cartilage averaged 22 to 23 kilogrammes. The line of fracture was most frequently median when the cartilages were ossified or calcified, and extra-median when they had merely undergone amiantaceous degeneration. This degeneration was less marked in the median line than laterally. The pressure necessary to break the cricoid cartilage averaged from 16 to 18 kilogrammes. It usually broke on the anterior arch in three places—one median and two lateral; sometimes there was a median fracture only, sometimes a median and one lateral; rarely two lateral without median fracture.

The cricoid broke, therefore, at the same points as in the living subject. Pressure with the thumb at the median portion of the cartilage produced first depression of the anterior arch; then, if the cartilage was affected with amiantaceous degeneration, a fracture was produced at the point of junction of the anterior arch with the chiton of the cartilage about 6 millimetres in front of the crico-thyroid articulation. It is, therefore, an indirect fracture occurring near the extremities of the great transverse diameter formed by the flattening of the cartilage, and it takes place at its most feeble point. At the same moment that the lateral fracture takes place, the anterior arch breaks at the median line. If, however, the cartilage is ossified or calcified, the median fracture is produced first. If the pressure be made along the axis which unites the two crico-thyroid articulations, the fractures occur at the same points, but the median fracture always occurs first. The fractures follow the direction of the amiantaceous striations parallel to the line of fracture. Hence they sometimes resemble the surfaces of diarthrodial articulations, excavated on one fragment with corresponding prominence on the other.

The mucous membrane is rarely torn, usually only contused. The inter-crico-thyroid membrane usually remains intact. The perichondrium is almost always torn in front, while the posterior perichondrium remains intact in the vicinity of the lateral fractures.

OBSTETRICS.

UNDER THE CHARGE OF

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CLINICAL LECTURER ON OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE;

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POST-PARTUM HEMORRHAGE.

ABBOT (*Boston Medical and Surgical Journal*, 1891, No. 24) reports two interesting cases of post-partum hemorrhage. In the first, after normal labor, the uterus contracted firmly, but was of unusual shape. Administration of ergot was followed by severe pain, necessitating morphine. Early on the following morning hemorrhage was detected, and a large clot was found filling the vagina. After this was removed, the os uteri was found widely open, the tissues lax. There was no subsequent hemorrhage. A laceration of the perineum had taken place, which was closed by one deep suture. This suture had dammed up the vaginal outlet, favoring the accumulation of a clot which excited uterine contraction and the expulsion of the retained blood.

In the second case, retention of the placenta occurred, and free hemorrhage, which occurred immediately after the birth of the child. It was necessary to remove the placenta by inserting the hand, when it was found to be not adherent, but simply retained by the non-symmetrical contraction of the uterus.

[These cases are apparently instances of tetanic condition of the uterine muscle, which frequently follows a somewhat difficult labor in a patient suffering from nervous exhaustion. These cases are successfully treated by the administration of an anodyne or an anæsthetic, emptying the uterus of clots, followed by a hot intra-uterine douche, and, if needed, a tampon of iodoform gauze.—ED.]

AN UNUSUAL LACERATION OCCURRING AT LABOR.

An instance of direct laceration into the rectum, occurring at labor, is given by PIERING (*Centralblatt für Gynäkologie*, 1891, No. 48). The patient was a primipara, aged forty-one years; the pelvis was normal, but the outlet of the genital canal was exceedingly narrow, and the tissues very little elastic. After rotation had occurred, the pains suddenly ceased. An attempt to expedite the birth was followed by a sudden bleeding from the rectum and the appearance of the right hand of the child protruding from the bowel. The perineum remained intact. The arm was replaced, when labor was readily completed. Upon examination, an extensive laceration was found upon the left side of the vagina, in the middle of which the tissues had been lacerated through to the rectum. The cervix had sustained no important laceration. No sutures were applied, but after thorough disinfection

tion, the vagina was tamponed with iodoform gauze. On the third day after the labor the bowels moved spontaneously and normally. The parts were cleansed by carbolic solution, and iodine was applied on two occasions to the surface of the granulating wound. Complete recovery followed.

ACUTE OÖPHORITIS COMPLICATING PREGNANCY.

Three cases of this unusual condition are described by COE (*American Gynecological Journal*, 1891, No. 9). In one, an exacerbation of a chronic oöphoritis followed overheating and sudden exposure to cold. Recovery ensued without the interruption of pregnancy.

In the second case, septic infection followed abortion, and a second pregnancy supervened. Ovarian abscess was diagnosticated, and stimulants were freely administered. A large quantity of pus appeared in the urine, although there was no evidence of cystitis. The patient's pain and temperature subsided. After gaining for some time, fever and sweats again appeared, when labor was induced. After the termination of pregnancy, the patient progressed steadily toward recovery, and ultimately became perfectly well.

The third patient was a multipara, who had had pelvic inflammation; at seven months of her pregnancy she had a chill and fever, with pain over the right ovary. She recovered from this, and was well until her confinement. The third day after labor she had a chill and fever, and complained of pain in her right side. After intervals of gaining and losing, ovarian abscess was diagnosticated, and an incision was made over a mass in the pelvis. The diagnosis was correct, and the tube and ovary of one side were removed. The patient was much better afterward. Recovery followed in four weeks after the operation.

In writing of treatment, Coe advises a largely expectant method. Constipation is to be avoided, and hot applications may be used over the area of pain. Abdominal section is most successful when performed before the fifth month.

A NEW METHOD OF PERFORMING CRANIOTOMY.

KEPPLER has discarded the perforators usually employed, and uses instead a concave gouge or chisel. A chisel-forceps is also used, each blade of which is hollowed out and rendered concave. For extracting pieces of bone, a pair of forceps whose blades terminate in two sharp-edged rings was used; a catheter and funnel are employed for antiseptic irrigation. Keppler reports (*Wiener medizinische Presse*, 1891, No. 48) thirty-nine cases with a mortality of three.

TWIN LABOR COMPLICATED BY MULTILOCULAR OVARIAN CYST, FOLLOWED BY RUPTURE OF THE CYST.

These interesting complications of labor are described by KÖHLER, in the *Wiener medizinische Presse*, 1891, No. 49. The delivery of the twins was accomplished by the forceps. The puerperal period was complicated by pleuro-pneumonia. In the left inguinal region, dulness and resistance were

noticed, with deep fluctuation, which was supposed to indicate the presence of an exudate. Under treatment by warm baths, douches, and iodide of potassium ointment, the exudate disappeared, when it was found that an ovarian cyst as large as a man's head was present. Four days after this diagnosis was made, the patient suddenly collapsed with excessive pain. Laparotomy was performed, and an ovarian cyst was removed. It was found that the tumor had burst. The patient made a good recovery in two weeks.

PREGNANCY AND PARTURITION COMPLICATED BY CANCER OF THE UTERUS.

VON HERFF (*Centralblatt für Gynäkologie*, 1891, No. 50) reports an interesting case of carcinoma of the cervix. Seven months later, conception occurred and pregnancy was normal. At labor, prolonged delay was noticed. The tissues about the os were so infiltrated with the carcinoma that dilatation was exceedingly difficult. Multiple incisions into the carcinomatous tissue were employed, but at first with little success, and preparations were made to perform Cæsarean section. A last resort to multiple incisions in the cervix was followed by an increased strength of the labor-pains and the spontaneous expulsion of the child. Mother and child recovered well. The mother perished later from the cancer, and the child died of meningitis.

THE MIGRATION OF THE OVUM.

HASSE, of Breslau (*Zeitschrift für Geburtshilfe und Gynäkologie*, 1891, Band xxii., Heft 2) gives the results of his investigations upon this subject. He finds that migration of the ovum is rendered possible by the development of pockets separated from the abdominal cavity surrounding the oviduct; the ciliated epithelia of the tube penetrate this pocket, and the serous fluid found in the tube and the ovum are forwarded by this means in a direction contrary to the usual passage through the abdominal opening of the oviduct. External migration of the ovum results when the diverticula upon both oviducts developing at the upper extremity of the uterus form a single capillary space in which both oviducts empty and into which the ciliæ of the epithelia dip. If in such a case the movements of the ciliæ of one tube are more vigorous than in the other, the ovum may be abstracted with the capillary flow of serous fluid from the oviduct of the opposite side behind the uterus and the median line to the abdominal opening of the opposite tube. If the formation of the diverticulum is defective, the ovum may escape into the abdominal cavity and develop there as an abdominal pregnancy.

GONORRHOËAL INFECTION OF THE ORAL MUCOUS MEMBRANE IN THE NEWBORN.

Continuing his researches, described in a previous number of the *Zeitschrift für Geburtshilfe und Gynäkologie*, ROSINSKI, in Band xxii., Heft 2, of this publication describes some interesting observations upon the immunity displayed in certain portions of the mouth and connected cavities against the gonococcus. The lesions caused by this germ in the mouth develop only

where the pavement epithelium has been removed. These cells are especially fragile in the young child, and hence the readiness with which infection occurs. It is interesting to note that, in gonorrhœal ophthalmia, it is very rare to find that the lachrymal sacs become involved; it is also true that the cylindrical epithelium of the naso-pharynx seems also to resist successfully invasion by the gonococcus. Clinical observation shows that these cases develop usually between the fifth and tenth day of life, resulting often from infection occurring at birth from the genital canal, and oftentimes through direct infection at the hands of attendants. This is especially true where the epithelium of the mouth is destroyed through efforts at cleansing. These cases are remarkable for the fact that they affect the general health so little; the children nursed well and seemed free from pain. The lesions were yellowish plaques, surrounded by a border of pale-reddish tissue, in which the process of healing usually began upon the third day by a reaction zone of deeper color. The epithelium was renewed from the borders of the plaque, pus-cells being thrown off as the healing progressed. Scar-tissue was never developed in these cases.

A SUCCESSFUL OPERATION FOR UMBILICAL HERNIA IN THE NEWBORN.

In a series of interesting cases reported by RUNGE at the Göttingen Clinic (*Archiv für Gynäkologie*, 1891, Band xli., Hefte 1 u. 2) is the account of a case of umbilical hernia operated upon sixteen hours after birth with success. The hernial sac was the size of a small lemon, its membrane firm in character, and of grayish-green color. Chloroform was given, and the antiseptics employed were a solution of salicylic acid, carbolic acid for the instruments, and iodoform. In dissecting out the sac and freshening the edges, it was found that the peritoneum was adherent to the upper layer of the peritoneum at the left lobe of the liver. These adhesions were separated, causing considerable hemorrhage, which was checked by the thermo-cautery. The abdominal walls were resected sufficiently to permit the easy closure of the edges; the wound was brought together with silver wire, the umbilical vein having been ligated with catgut. Iodoform gauze was used as a dressing, retained in place by adhesive plaster. The child was placed in an incubator and artificially fed after the operation. The stitches were removed on the twentieth day, the wound having been dressed first on the fourteenth day. Union by first intention was the result.

THE HISTOLOGY OF PUERPERAL ENDOMETRITIS.

BUMM (*Archiv für Gynäkologie*, 1891, Band xl., Heft 3), from a histological study of five uteri from cases of puerperal endometritis, divides this affection into putrid and septic varieties. The first is characterized by the presence of saprophytic bacteria, septic germs being absent. The superficial layers of the decidua are involved, and the chemical products from the bacteria absorbed by the lymphatics produce fever and the other phenomena of intoxication. The peculiarity of this form of endometritis is the foul odor which characterizes the discharge. These cases are not at all uncommon, happening frequently after abortion. After the uterus has been washed out or curetted, the odor rapidly disappears and the fever falls. Pathogenic bacteria are not

often found in these cases. A zone of infiltrating cells is found beneath the decidua, through which bacteria do not often penetrate. The infectious material in these cases is apparently the chemical product of the bacteria.

In septic endometritis, streptococci are the most frequent infective agents. This form of endometritis is found as localized, or endometritis followed by general infection. In the first the bacteria are shut off from the circulation by a layer of connective-tissue cells in the localized lesion; the streptococci do not, as a rule, penetrate this layer; after disinfection of the uterus recovery usually follows in these cases.

In cases of general infection the lymphatics are the usual conveyers of bacteria. Occasionally the infective material is carried by the venous channels of the uterus, thrombosis developing, followed by puerperal pyæmia.

[The practical conclusion of these researches is distinctly in favor of the local treatment of puerperal endometritis. It should be noted that in the septic variety the rapidity with which infecting bacteria gain access to the general circulation renders the prompt disinfection of the uterus indispensable. When the practitioner is satisfied that a rise of temperature after labor is not due to lesions in the outer portion of the genital canal, he should at once disinfect the endometrium by the intra-uterine douche, accompanied by the use of the blunt curette and the intra-uterine antiseptic suppository.—Ed.]

A SUCCESSFUL CÆSAREAN OPERATION FOR CARCINOMA OF THE UTERUS.

PORAK (*Nouvelles Archives d'Obstétrique et de Gynécologie*, 1891, No. 11) reports a case of Cæsarean operation upon a multipara suffering from carcinoma of the uterus. The operation was performed at term, the patient being in the first stage of labor. Under careful antiseptic precautions the abdomen was opened, the infant and its appendages removed, and two injections of ergotin were given. The uterus was washed out with hot water, and a third injection of ergotin sufficed to check the hemorrhage. Eight deep and twelve superficial stitches of carbolized silk were put into the uterus. The uterine muscle was not resected, but the stitches were taken to the border of the mucous membrane. After the closure of the abdomen a dressing of iodoform gauze and borated cotton was employed. The patient made a good recovery from the operation and was transferred to a surgical ward for the treatment of the carcinoma. The radical operation was impossible, and the patient's health steadily failed. The child was jaundiced, ill-developed, and suffered from a general toxæmia.

THE TRANSMISSION OF MATERNAL SYPHILIS.

NUNN (*Medical Press and Circular*, 1891, No. 2742) describes the case of a woman nearly sixty, who had syphilis and had borne a syphilitic daughter. The daughter in turn gave birth to an infant manifesting symptoms of syphilis. The father of this infant could not be proved to be syphilitic. The case bore every appearance of a transmission of syphilis through the mother to the third generation. In his experience, the treatment of syphilis during pregnancy did not protect the child against congenital syphilis. When the

pregnancy was terminated, however, treatment was more successful, and its constant repetition even cured the patient.

THE IMMUNITY OF THE MOTHER WHEN THE FATHER SUFFERS FROM SYPHILIS.

DIDAY (*Archives de Tocologie*, 1891, No. 11) believes that the mother does not become syphilitic through the placenta, but through the blood of the fœtus begotten by a syphilitic man.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

THE TREATMENT OF ENDOMETRITIS.

KALTENBACH (*Centralblatt für Gynäkologie*, 1891, No. 44) disapproves of the application of caustics, which may cause atresia of the cervical canal. Forceful dilatation often repeated is also reprehensible, since lesions of the mucosa are thus produced, infection of which may readily give rise to parametritis through the medium of the lymphatics. Even if infection is avoided, repeated dilatation, irrigation, or applications to the interior of the uterus keep the patient in a constant state of nervous irritability, detrimental to her health, aside from the danger of causing toxic symptoms. Many cases of catarrh fail to improve because proper precautions are not taken to avoid fresh infection. The vulva and vagina should be thoroughly disinfected before any application is made to the endometrium. After this has been done, the uterine cavity should first be cleansed with sterilized gauze, followed by an application of strong tincture of iodine. In cases of long standing the thorough use of the curette should precede these applications, this treatment to be repeated only at long intervals.

MACKENRODT (*Ibid.*) does not hesitate to adopt the same treatment (injection of tincture of iodine after curetting), even when the adnexa are secondarily affected, provided that the presence of suppuration is positively excluded. It is, of course, not begun until the acute stage has passed. Forty-five cases are reported, in none of which were any bad symptoms noted. Seventeen patients were cured and twenty-two were improved.

THE ANATOMY AND ETIOLOGY OF ENDOMETRITIS.

DÖDERLEIN (*Centralblatt für Gynäkologie*, 1891, No. 44) confirms Olshausen as to the anatomy of the various forms of endometritis. These are readily differentiated microscopically by the examination of scrapings, although they cannot be separated clinically. The writer is firmly of the opinion that

benignant can always be distinguished from malignant disease of the endometrium in this way. He has examined numerous specimens in order to determine if simple non-septic endometritis is due to the presence of pathogenic bacteria, but always with negative results, an experience which is directly contrary to that of Brandt. It would seem as if Brennecke's theory was a plausible one—that hyperplastic endometritis is directly dependent upon disturbance of the ovarian functions.

THE ELECTRICAL TREATMENT OF IRRITABLE BLADDER.

GRAPOW (*Centralblatt für Gynäkologie*, 1891, No. 44) reports three cases of enuresis in young women between the ages of seventeen and nineteen years, in one of whom the condition had persisted since childhood. He used the faradic current, with the bipolar electrode introduced into the bladder. Ten séances were given, of five minutes each, the secondary current of moderate strength being used. In two cases the trouble disappeared after the first application; in the third it persisted only until after the following menstrual period.

HYDRASTININ IN UTERINE HEMORRHAGES.

CZEMPIN (*Centralblatt für Gynäkologie*, No. 45, 1891) uses the hydrochlorate of hydrastinin in doses of a quarter of a grain four times daily, usually administering it during the first two or three days of the menstrual flow. In cases of uterine fibro-myoma it is advisable to give the drug a few days before the flow begins.

Fifty-two cases are reported, good results being obtained in twelve cases of menorrhagia due to disease of the adnexa. In twenty cases of chronic endometritis the result was very good in thirteen, and fair in six—that is, the hemorrhage ceased within from twenty-four to thirty-six hours after the exhibition of the drug.

The result in four cases of fibro-myoma was negative. Profuse menstruation following confinement was treated successfully, but hemorrhage after abortion was not affected. Menorrhagia in virgins from uterine congestion was relieved in about one-half of the cases. In general, in over fifty per cent. of the whole number of cases the hæmostatic action of the drug was marked. It doubtless contracts the bloodvessels of the endometrium, and hence is not to be compared with ergot, which causes contraction of the muscular fibres of the uterus, and hence is more efficient when the organ is in a state of relaxation. On the other hand, hydrastinin is a valuable remedy in all cases in which congestion of the normal mucosa is due to functional disturbances of the ovaries (as in virgins and women at the climacteric) or to disease of the adnexa, as well as in menorrhagia dependent upon hyperplastic endometritis. However, it is uncertain in its action, and may have no effect whatever.

GONORRHEAL VULVO-VAGINITIS IN LITTLE GIRLS.

R. SKUTSCH (Inaugural Dissertation; abstract in *Centralblatt für Gynäkologie*, 1891, No. 46) had an opportunity to study this affection during an epidemic, in the course of which 160 cases came under his observation in the same institution. The infection occurred through the medium of baths, but it

could not be positively determined to what extent the same water and towels were used by several children in succession. An interesting fact was that boys who were exposed to the same source of infection escaped, showing the greater susceptibility of the female genital tract.

The gonorrhœal nature of the discharges was proved by the finding of the characteristic gonococci, which persisted in sixty preparations after ten weeks' treatment. The latter consisted in daily vaginal injections of chloride of zinc (one per cent.), bichloride (one to five thousand), alum (one per cent.), sulphate of zinc (one to four hundred), and nitrate of silver (one to three thousand), none of which seemed to have any marked effect. Iodoform-pencils were also used with negative results. In conclusion, the writer calls attention to the importance from a medico-legal standpoint of examining suspicious vaginal discharges in children, with the view of determining the presence of gonococci, especially in cases of supposed rape.

THE ABUSE OF CATHARTICS IN GYNECOLOGICAL TREATMENT.

LOEMER (*Centralblatt für Gynäkologie*, 1891, No. 46) calls attention to the fact that the excessive use of laxatives by women leads to paralysis of the muscular coat of the intestine. This condition can be overcome in time by careful regulation of the diet, sufficient exercise in the open air and massage, with the use of both the faradic and galvanic currents. In one case the writer suspended all laxatives and enemata, and persisted with this treatment for eleven (!) days before a movement of the bowels occurred, but after that they moved spontaneously and the patient's health began to improve.

RETRO-PERITONEAL TREATMENT OF THE PEDICLE AFTER SUPRA-VAGINAL AMPUTATION.

BESSELMANN (*Centralblatt für Gynäkologie*, 1891, No. 47) reports a successful case operated upon according to Chrobak's method. With the patient in Trendelenburg's posture the adnexa were first removed, and the broad ligaments were ligated and divided. The peritoneal covering of the corpus uteri was incised at the middle of the organ and was dissected off as low down as the vaginal fornix. The uterus was then amputated at about the level of the os internum, and the cervical canal was disinfected with a solution of bichloride, one to one hundred. In order to check oozing from the stump, the latter was transfixed and tied with silk, the cervical canal being avoided and the peritoneum not included. The canal was then tamponed with a strip of iodoform gauze, the end of which was pushed through into the vagina with a sound. The edges of the peritoneum were then united by a continuous silk suture, completely covering in the stump. The abdominal wound was closed in the usual manner without a drainage-tube.

Recovery was rapid and uninterrupted. The gauze was removed *per vaginam* on the third day, a small quantity of odorless discharge following. The patient was discharged on the twenty-third day. The writer claims that sufficient drainage is obtained through the cervical canal, and that if suppuration of the stump occurs, the discharge is evacuated better than when the stump is treated according to Schröder's method.

[We have already called attention to the independent work of Dr. Goffé, of New York, in connection with this ingenious method of treating the stump.—H. C. C.]

INTRA-PERITONEAL TREATMENT OF THE PEDICLE IN MYOMECTOMY.

ZWEIFEL (*Archiv für Gynäkologie*, 1891, Bd. xli., Heft 1 u. 2) contributes a valuable paper on this subject, clearly illustrated. His method is as follows: The tumor is lifted out of the wound, and the broad ligaments are ligated in the usual manner, with this exception, that the lowest ligature is placed as close as possible to the uterus. The cervix is then temporarily constricted with a rubber cord; the peritoneum above it is divided and is dissected off with the finger-nail so as to form a cuff, as in a circular amputation-stump. The mass is then excised just above the ligature, the cervical canal is thoroughly cauterized, and the eschar is then excised with a wedge-shaped piece of healthy tissue. The edges of the stump are sewed together with catgut, and the peritoneal edges are united over the stump by a Lembert suture. The writer has operated upon fifty-one cases by this method, with a mortality of only 4 per cent., the last twenty-seven patients recovering.

REEVES (*Medical Press and Circular*, 1891, No. 25) concludes a lengthy article (well illustrated) on the intra-peritoneal treatment of the pedicle, with a description of his method of operating, which consists essentially in securing each broad ligament with two pairs of long compression forceps, dividing the ligament between them, applying ligatures to the distal portion, and securing each uterine artery separately by a ligature carried with an aneurism-needle through the fornix vaginae, close to the cervix. A rubber cord is then applied, the mass removed, the opposite surfaces and edges of the stump are sutured, and it is dropped back with the cord *in situ*. If desired, it is an easy matter to remove the cervix *per vaginam*, in which case the writer prefers to suture the peritoneum over the vaginal opening.

KIKKERT (abstract of Inaugural Dissertation in *Centralblatt für Gynäkologie*, 1891, No. 47) reviews the different methods of treating the pedicle in hysteromyomectomy, and expresses his preference for the intra-peritoneal. Treub has operated thus with good results in fifty-seven cases, constricting the stump with a rubber cord and dropping it back, without suturing or covering it with peritoneum. Terrillon is the only foreign operator who has adopted this plan, which the writer favors, in spite of Zweifel's criticism that it is a dangerous experiment to which to subject a patient. He thinks that it is better not to cover the stump with peritoneum, since septic fluid collecting beneath the latter might force its way into the peritoneal cavity instead of escaping through the cervical canal. There is also danger of infection from the vagina. The danger of intestinal adhesion is small if perfect asepsis is maintained. The objection made against the elastic cord as a large foreign body in the cavity might be urged with equal propriety in the case of the stout silk ligatures with which Zweifel transfixes the stump. In conclusion, the writer shows the results obtained at the Leyden clinic, where this method is practised. Treub lost only five patients out of fifty-seven—two from intestinal obstruction. Mendes de Léon lost two out of eleven cases, and Meij two out of twenty-four.

TOTAL EXTIRPATION OF THE UTERUS FOR MALIGNANT DISEASE.

GUSSEROW (*Berliner klin. Wochenschrift*, 1891, No. 47) reports sixty-seven cases of total extirpation; in four of these laparo-vaginal hysterectomy was performed, with three deaths. He regards the latter operation as a dangerous one, to be undertaken only under exceptional circumstances, where the vagina is unusually narrow, or carcinoma is complicated with fibro-myomata. The total mortality was 10.4 per cent. Of fifty patients who had been operated upon over a year before, sixteen were free from recurrence (one after the lapse of eight years), eleven had died from the disease, and one from pyelonephritis; eleven had a recurrence, and eleven were not heard from.

The writer believes that statistics will only be improved by early resort to the radical operation, at a time when the diseased tissue can be thoroughly removed. He rejects cases in which the vagina and broad ligaments are involved. Limitation of the mobility of the uterus (the patient being anesthetized) by indurations in the parametria should be a contra-indication, even if the operator is not positive regarding their malignant character. By operating upon such doubtful cases vaginal hysterectomy is brought into disrepute. His strict adherence to this rule led the writer to operate upon only five per cent. of the cases treated by him.

THE POSITION OF THE UTERUS IN THE HUMAN EMBRYO.

NAGEL (*Archiv für Gynäkologie*, 1891, Bd. xli., Hefte 1 u. 2) has made careful microscopical studies of embryos with the view of verifying the correctness of the prevailing view expressed by Bardeleben, that when the bladder is empty the uterus in the adult is normally anteverted, and in children and young girls is anteflexed. He found that in the youngest embryos there was present a marked curve in the urogenital tract at a point corresponding with the future corpus uteri, and that in some cases acute anteflexion might be regarded as a congenital condition, as affirmed by Schröder. It seems as if the intimate union of the genital tract with the bladder had something to do with this flexion, although this is not the only cause (as Kölliker believes), since the bend in the former occurs long before this union takes place. Neither is Tschaussow's view tenable—that the anteflexion of the uterus is due to the contraction of the pelvis in the embryo—simply because this condition is sometimes met with in cases of pelvic contraction in the adult.

THE ANATOMY, PHYSIOLOGY AND PATHOLOGY OF THE PORTIO VAGINALIS.

DÜRRSEN concludes an elaborate paper with this title (*Archiv für Gynäkologie*, 1891, Bd. xli., Hefte 1 u. 2) with these deductions:

The portio consists of two parts, a peripheral and a central, the latter terminating at the cervical endometrium. The peripheral is distinguished histologically from the central by its greater amount of connective tissue and excess of elastic fibres, the latter forming a superficial network beneath the squamous epithelium, and a deeper layer surrounding the vessels; both interlace with those of the vagina.

The function of these elastic fibres is to effect dilatation of the os during labor. The central part of the portio then remains unchanged, while the peripheral blends with the vaginal wall. This unfolding of the portio is due to two factors—the traction of the uterine muscle from above and the centrifugal pressure exerted by the bag of waters, and later by the presenting part.

The deep layer of elastic fibres is absent in the newborn and in old subjects, and is poorly developed in women with infantile uteri, as well as in those who conceive late in life. This accounts for the rigidity of the portio in old primiparæ. Mechanical dilatation in such subjects is an unscientific procedure; if necessary to hasten delivery, it is better to make deep incisions.

In consequence of the presence of elastic fibres amputation of the portio is followed by the formation of cicatrices which, occurring on the posterior lip, favor the development of posterior parametritis. The same anatomical peculiarity may account for the extension of carcinoma of the portio to the paracervical tissue.

Ectropion may be distinguished from erosion by remembering that elastic fibres are absent in the vicinity of the cervical glands, but underlie the squamous epithelium.

PAPILLARY CYSTOMATA OF THE OVARY.

WILLIAMS contributes a paper on the histogenesis of these growths to the *Bulletin of the Johns Hopkins Hospital*, December, 1891. He arrives at the following conclusions regarding the origin of papillary cystomata:

1. They usually develop from the Graafian follicle, and will be lined with ciliated or non-ciliated epithelium according to the original condition of the cells in the membrana granulosa. The growth will be intra-ligamentous if the affected follicles grow between the folds of the broad ligament.

2. Superficial papilloma probably develops from the germinal epithelium only, and is often the starting-point for ordinary multilocular papillary cystoma.

3. It is possible that some cysts of this variety may develop from ingrowths of the epithelium of the tube into the ovarian stroma.

PELVIC MASSAGE.

DÜHRSEN (*Berliner klin. Wochenschrift*, 1891, Nos. 44, 45, and 46) thus concludes an elaborate paper on Thure Brandt's method, in which he gives a detailed account of the treatment of eighteen cases: If endometritis is absent, the thorough application of massage will stretch or separate bands or adhesions. Organs which are fixed may be more quickly rendered movable by Schultze's method, practised under narcosis; massage should be employed subsequently in order to prevent the formation of fresh adhesions. Laparotomy is no longer justifiable in cases of retroflexion with fixation and chronic oöphoritis and peri-oöphoritis until massage has been thoroughly tried, provided that the trouble is not of gonorrhœal origin. Systematic elevation of the uterus is often sufficient to cure retroflexion. Parametric exudations which were formerly purulent foci are unsuitable for massage; ordinary exudations are generally quickly absorbed.

STERILITY IN FAT SUBJECTS.

KISCH (*Wiener med. Presse*, 1891, No. 21) calls attention to the fact that while the proportion of sterile to fruitful marriages is one in ten, the sterility in fat women, as compared with others, is five to one. Excessive development of adipose in the male is often accompanied by diminution in the number of spermatozoa, or even by azoöpermia. In the female, menstrual disturbances, especially amenorrhœa, and chronic metritis are common. Mechanical impediments to coitus are also to be considered. The prognosis is fairly good if the patient's weight can be reduced, for which certain baths are advised.

[It is important to remember that non-development and atrophy of the pelvic organs play an important part in these cases, and should render us careful about giving too favorable a prognosis.—ED.]

TUBO-OVARIAN CYSTS.

SCHRAMM and NEELSEN (*Archiv für Gynäkologie*, Band xxxix., Heft 1) from a careful study of these cysts (which they define as cysts the walls of which consist partly of the tubal mucosa and partly of ovarian tissue) arrive at the following conclusions: It is highly improbable that a tubo-ovarian cyst is ever congenital; this form has certainly never been observed. Burnier's theory is not tenable, viz., that in consequence of an inflammatory process the fimbriæ are inverted, closing the ostium abdominale and resulting in the formation of a hydrosalpinx, the cavity of which subsequently communicates with that of an ovarian cyst (to which it has become adherent), through a reopening of the closed ostium. The actual process is a gradual thinning of the septum between the cystic ovary and the distal end of the adherent tube, the dilatation of the latter being aggravated by the bend which always occurs at the junction of the ampulla and the pars isthmica, which is comparable to the development of hydronephrosis in consequence of a similar bend in the ureter.

THE MEDICINAL TREATMENT OF UTERINE FIBROIDS.

ENGELMANN, of Kreuznach (*Edinburgh Medical Journal*, November, 1891), from an experience in nearly 700 cases of uterine fibroid treated at Kreuznach, gives the results of medicinal and hydro-therapeutic treatment. The mutter-lauge baths are prescribed for this condition, and compresses wet in the diluted mutter-lauge are kept on all night. If the tumor is growing rapidly, and hemorrhage is profuse, he gives daily injections of ergotin. These are never given during the menstrual flow, as they increase the hemorrhage. 304 cases were treated by baths alone; in 61 cases the patients were in poor condition from pain and hemorrhage: 38 cases were much improved, 11 recovered completely, and 12 showed no improvement. In 31 per cent. the hemorrhage was entirely checked, and in 50 per cent. it was diminished. Pressure-symptoms were partially or entirely relieved in 83 per cent. of these cases. In only 19 per cent. did the tumor diminish in size. Ergotin in addition was used in 96 cases, all of which were of the more severe type. In 21 of the worst cases there was entire relief from the hemorrhage in 17, from

the pressure-symptoms in 20, and the tumor diminished in size or ceased to grow in 73 out of the 96 cases.

Twenty-one patients were treated by Apostoli's method, the treatment extending over a year or more. Of the 8 cases in which hemorrhage was profuse only one was cured. Pain was relieved in 33 per cent. In 33 per cent. the tumor diminished in size, and in 43 per cent. it ceased to grow. In general, the serious symptoms due to the presence of the tumor were either cured or much relieved in 80 per cent. of the whole number of cases. In from two-thirds to three-fourths of the cases the tumor either diminished in size or its growth was arrested.

The writer expresses the opinion that while the poorer classes may be obliged to submit to operations for relief from uterine fibroids, such operations ought to be rare in the case of those patients who have the time and money to undergo a thorough course of palliative treatment.

PÆDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,
OF PHILADELPHIA.

HYSTERIA IN THE NEWBORN AND IN CHILDREN UNDER TWO YEARS OF AGE.

A recent paper read before the Académie de Médecine, by CHAUMIER (*La Semaine Médicale*, December 2, 1891), presents some interesting observations of what the author considers infantile hysteria. If this neurosis has not hitherto been observed in the newborn, it is because, in the author's opinion, convulsive manifestations in young children have always been considered a special malady, an eclampsia, which may replace the chill or the delirium of the adult, or may even be provoked by indigestion or simple malaise. The slightest degree of the affection in newborn infants is manifested by repeated fits of passion, without sufficient cause, and accompanied by cries. In a higher degree, the child will stiffen her limbs; her face will become violaceous and turgescient, or, more rarely, pale. Trembling may accompany or follow these attacks. Some children roll upon the floor or on the bed, making strong movements of the legs or arms, without always losing consciousness completely. In a still more exaggerated degree, the child suddenly ceases crying and loses consciousness; the body is most often rigid and the mouth widely open; at other times the body is limp and there are no contractions. These attacks are characterized by the parents as "fainting spells." Hysterical infants may be seized with these spells in the midst of the cough of pertussis or bronchitis, or in a simple coryza. In these cases there is danger of confounding the attack with spasmodic croup. Children are likewise subjects of the fully developed manifestation of hysteria. After being crossed,

or without any assignable cause, the child loses consciousness, the body and members are rigid, while the eyes are often convulsively moved and rolled upward. Sometimes spasms are noted in the rigid limbs, or, more rarely, disordered movements take place. At other times there is no rigidity, and the body lies supine and still.

These attacks may occur rarely, or, on the contrary, several times a day, constituting a veritable diseased condition. While it is almost impossible to demonstrate hemianæsthesia or hyperæsthesia in these young subjects, the author has noted contracture and paralysis, as well as absence of the conjunctival and pharyngeal reflex. Prognosis is said to be favorable, and treatment much more successful than in the adult.

UNUSUALLY SHORT INCUBATION OF SCARLATINA.

BOKAI (*Archiv f. Kinderheilkunde*, 1891, Hefte 1 u. 2), in his service at the "Stefanie" Kinderspital, in Budapest, has observed several cases of rapidly incubated scarlatina under circumstances which gave positive certainty to the assigned duration of its incubation. According to the older authors, the period of incubation of scarlatina was from eight to fourteen days, but more modern observations have materially changed this view. Trousseau first called attention to the fact that this period might be very greatly shortened, citing a case in which it was scarcely twenty-four hours. In 1864, Murchison estimated the duration of this period in several cases as twenty-four, thirty-one and a half, thirty-six, and forty hours, respectively; and, at the same time, related the experience of Richardson, who, within a few minutes after auscultating the bare chest of a scarlatinous patient, had a severe chill and noticed a peculiar taste, phenomena which were followed by a regular development of the disease. In 1868, Besnier recorded two cases occurring in the practice of Gintrac, in which the incubation was from twenty-four to thirty-six hours; and, a year later, Rehn mentioned instances in which the duration was from twenty-four to forty-eight hours. A few examples of correspondingly short periods of incubation have been recorded in more recent years by Gerhardt, Salles, Dukes, Raven, and other observers.

The two cases reported by the author occurred under the following known conditions. In November, 1888, scarlatina appeared in the ward of the Stefanie Hospital devoted to diphtheritic patients: after a month's energetic endeavor it was finally stamped out. The first of the cases under discussion, a boy of four and one-half years, was admitted to this ward on December 6, 1888, with well-marked symptoms of diphtheria and diphtheritic croup. Tracheotomy was performed that same afternoon. The next morning a characteristic scarlatinous eruption was found upon the trunk and limbs. In this instance the disease appeared in less than twenty-four hours after admission to the ward, and sixteen hours after the surgical traumatism. The second case, a girl of two years, suffering from diphtheria, was admitted to the ward on December 7, 1888. Tracheotomy was performed that same morning, and at the next morning's visit a scarlatinal eruption was discovered—about twenty-four hours, therefore, after admission.

The author maintains the identity of surgical scarlatina and true scarlatina, according to the most modern views, and admits, with Sée, the possibility of

the coexistence of diphtheria and scarlatina. That his cases were not examples of scarlatinous diphtheria seems proven by the occurrence of undoubted cases of scarlatina contracted in the ward both before and after these two children were affected, and by the fact that both cases had on admission marked laryngeal symptoms, which are extremely rare in connection with the so-called scarlatinal diphtheria. It is interesting to note that both these cases had submitted to surgical traumatism, which, as is well known, even in the most insignificant operations, very powerfully predisposes to infection from scarlatinous germs. In this light the author acknowledges that his cases are not so significant as the earlier observations of Trousseau and Murchison, or the more recent ones of Gerhardt, Dukes, and others, from the fact that the tissues exposed by the knife had immediately taken up the scarlatinous virus and precipitated it at once into the blood-stream; but they give further confirmation of the possibility of a short incubation, and illustrate the extreme susceptibility which children show to scarlatinous infection after surgical operations.

AN INSTANCE OF CURIOUSLY MIXED EXANTHEM, PROBABLY SCARLATINOUS.

TAYLOR (*Medical News*, December 19, 1891) reports a peculiar case of exanthematous fever in a boy of nine years, interesting from its exhibiting prominent symptoms of both scarlatina and measles. Without any period of prodromal malaise the child came home from school at mid-day complaining of having "caught cold" and feeling a slight sore-throat. That same evening the mother noted a bright rash extending over almost the entire surface of the body; and the next day this rash was uniformly distributed over the entire body, of a vivid dusky-red color. The skin felt hot, stinging; much roughened by plainly visible papules, which were especially thick upon the forehead, about the ears, and on the neck. The pharynx was irregularly punctate and dusky, each tonsil exhibiting a dirty-yellow ulcer, just about the size and shape of a small watermelon-seed. The tongue was perfectly clean and moist, remaining so throughout the attack. The conjunctivæ were clear, and free from injection; and the urine was febrile in character. At the same time there was acute coryza and slight cough, high fever, and full pulse, but undisturbed respiration. The boy had had measles on three previous occasions, in two of which the author had attended him, but had never had scarlatina. On the third day the child was better, had slept well, called for more food, and had decidedly less fever. The throat was almost well. Each of the papules on the forehead and neck had become a tiny vesicle, and the dark blush, though still uniform, was of paler tint. The eyes now seemed injected, and distinct photophobia was complained of. On the fifth day the fever had disappeared, the cough was more pronouncedly bronchitic, the eyes were no longer injected, and the throat was quite healed. On the seventh day the whole surface of the body was found to be desquamating in huge plates, some of the fingers throwing off complete glove-like casts. No albumin was found in the urine when examined a few days later. Although presenting some unusual symptoms, there can be little doubt that the case was definitely one of scarlatina. While scarlatina often shows itself as

a papular eruption, it rarely exhibits the nasal and conjunctival catarrh so characteristic of measles. The most curious features of the case, however, were the punctation of the pharynx (so important as a premonitory symptom of rubeola), the clean tongue, and the very early and complete desquamation.

THE SUB-MEMBRANOUS TREATMENT OF PHARYNGEAL DIPHTHERIA.

At the recent annual meeting of the American Pædiatric Society, SEIBERT (*New York Medical Journal*, December 12, 1891) gave the results of fifty additional cases treated by sub-membranous injections of chlorine water. The ages of the children varied from six months to fourteen years. In forty-four cases the injections had been efficacious, in three there had been slight improvement, and in three none. Only four patients died, all of them being very severely affected, and evidently fatally so under any form of treatment. Recovery had taken place in from one to eight days.

The satisfactory results of the treatment were shown in a lowering of the temperature, improvement in heart's action, and disappearance of the false membrane. The chlorine water was the officinal preparation, freshly made, and was injected quite deeply so as to reach the submucous tissue. In the majority of cases the author had found it necessary to make only one injection. A suggestive fact is embodied in the statement that neither paralysis nor nephritis had occurred in any of the cases that recovered.

A CASE OF SECOND ATTACK OF WHOOPING-COUGH.

The possibility of second attacks of pertussis is denied by Rillet, Barthez, and Bergeron. Westen, however, has recorded one case, Trousseau two, and Roger five. The most recent instance is contributed by LEGENDRE (*Rev. mens. des Mal. de l'Enfance*, November, 1891), and constitutes the ninth case of the kind recorded. The patient was a young woman of twenty-five years, who had had pertussis at the age of ten years, at the same time as a sister and brother were affected. Fifteen years later the patient was brought to the author for a cough, which was regarded with suspicion because of the existence of tubercular disease of the lungs in several members of her family. Careful examination revealed no tubercular lesions; and the diagnosis was not made clear until, during a visit of the physician, the patient was seized with a most characteristic "kink." The girl was then found to have contracted this second attack from a child in the house suffering from severe whooping-cough.

SALOL AND ARSENITE OF COPPER IN THE DIARRHŒA OF CHILDREN.

MENSI (*Riv. gen. Ital. clin. Med.*, September 15, 1891) speaks most highly of the efficacy of salol in the acute or chronic diarrhœas of children. According to his experience, in the treatment of twenty-seven cases, he finds that the drug in a relatively short time arrests the intestinal flux, calms the colic and tenesmus, and restores the normal functions of the bowel. The medicament is well borne in daily dose of twenty-five or fifty centigrammes to two grammes, according to the age and the gravity of the case. It does not irritate the stomach, and produces no toxic symptoms. On the other

hand, he has found that arsenite of copper possesses no immediate advantages in the treatment of diarrhœa, and the results obtained have no superiority over those effected by other drugs.

THE TREATMENT OF EMPYEMA IN CHILDREN.

POPON (*Jahrb. f. Kinderheilk.*, xxxii., 1 u. 2) reports 24 cases of empyema in children. In one of the cases the pleura was punctured with a fatal result; in another the pus was discharged through the mouth, the empyema having ruptured into a bronchus, the patient recovering. Of the remaining 22 cases, 4 occurred in phthisical children, all terminating fatally, and another resulted in pyæmia. In the remaining 17 cases incision was made into the pleural cavity, and 2 of them resulted fatally. The literature of this subject shows that, prior to 1877, only 36 cases of cure after puncture of the pleural cavity had been reported; and of this number there were records of only 17 permanent cures. From 1877 to 1883 there is a record of 12 additional cures. During the same period there is a record of 151 radical operations, with 120 cures. Since 1883 there have been 70 cases reported, the operations having been performed with antiseptic precautions. Only 9 of these were fatal. During the same period only 2 successful cases of puncture have been reported. Hence the radical operation for empyema in children is to be preferred to puncture. The operation consisted in the author's cases of resection of the sixth or seventh rib, with slow evacuation of the pus, irrigation with a 3 to 5 per cent. solution of boric acid, the removal of clots of fibrin, breaking up of adhesions, drainage, suture, antiseptic dressing, and removal of the sutures on the sixth day. In some cases repeated irrigation was practised.

DISEASES OF THE HEART IN CHILDREN.

BRUCE (*Jahrb. f. Kinderh.*, xxxii., 1 u. 2) first describes acute inflammation of the heart; this term including endocarditis, pericarditis, and myocarditis. Rheumatism is looked upon as the most important cause of these diseases. Such a cause in children is not always easy to determine, and is frequently latent, especially in children with whom the panniculus adiposus is well developed. In order to determine, in a given case of pericarditis, whether there is a rheumatic origin, four points must be considered :

1. The occurrence of the disease simultaneously with an endocardial murmur.
2. The effect of anti-rheumatic treatment, especially the use of the salicylates.
3. The presence of complications in the joints after the most careful examination.
4. Possible hereditary influences.

Etiological factors which must also be considered are chorea, scarlatina, diphtheria, septicæmia, measles, tonsillitis, and peliosis rheumatica. After chorea, acute heart diseases may be present without the simultaneous presence of rheumatic disease. Attention is also called to the occurrence of pericarditis in connection with mild disease of the periosteum, and with pleuro-pneumonia. With regard to symptoms, attention is called to their

latency and mildness, compared with the condition which it obtains in adults. Myocarditis may be associated with symptoms indicating cerebral trouble, including delirium, headache, convulsions, or even coma. Another notable fact in connection with acute heart disease in children, is the tendency of its recurrence. It may continue for weeks and months, apparently ending in recovery, and then recur after the slightest appreciable cause. The immediate prognosis of heart disease in children is bad only in cases in which pleurisy or pneumonia occurs as a complication. The prognosis is better than it is in adults, and cases are on record in which all indications of valvular trouble have disappeared. The treatment should be regulated with a view to prophylaxis, suitable diet being insisted upon, and all suitable safeguards provided which will prevent excitation of the vascular system. In cases in which there is rheumatic disease, the salicylates should be given. When heart disease is actually present careful regulation of the diet is indispensable, and prolonged rest in bed should be insisted upon. The period of childhood is very favorable to compensatory hypertrophy when heart lesions are present. At that time the reserve force of the heart muscle can be counted upon, and the elasticity of the bloodvessels. The heart muscle may also be strengthened by means which will stimulate the activity of the coronary arteries. When anæmia is present the valuable results to be obtained by the use of arsenic and iron must not be forgotten. When heart lesions are established, and compensation does not occur satisfactorily, one must carefully inquire into the causes of such failure of compensation. Albuminuria seldom occurs in children in this disease. Nosbleed and the premature establishment of menstruation should always incite one to a careful examination of the condition of the heart. Remarkable results have been seen by the author as a consequence of the use of the muriate of strychnia when the heart action has been disturbed.

SYPHILITIC LESIONS OF THE LIVER IN THE FÆTUS AND NEWBORN.

HEUTINEL and HEUDELO (*Rev. mens. des Mal. de l'Enfance*, 1891) state that, among the lesions caused by syphilis in the viscera of the fœtus and newborn, lesions of the liver are among the most common. To the naked eye no particular change may be apparent. In a small number of cases there may be simple congestion, with increase of weight, which is due to a form of cirrhosis, the liver being enlarged, yellow, smooth, and hard. Between the two extreme types all intermediate ones are possible. One may occasionally see circumscribed changes of gummatous nature, of small or even of very large dimensions, and occasionally gummy tumors, such as one sees in adults. Inflammatory changes, including peri-hepatitis, peri-pylophlebitis of Schruppel's description, and peri-angiocholitis of Chiari and Beck, are of frequent occurrence. With the microscope one finds lesions of varying age and degree, either simple congestion of the blood capillaries with stasis of leucocytes, or diapedesis of the leucocytes, which become broken up in their migration. Their cells become atrophied or struggle against infection by karyokinetic multiplication of their nuclei. In other cases there may be a diffuse interstitial sclerosis—the monocellular cirrhosis of Charcot. With regard to the nodular lesions, they begin by simple microscopic accumulations of nuclei

which may either undergo fibrous transformation, or may develop into miliary syphilomata. Occasionally they become true gummata by gradual growth.

In a word, the changes at the beginning are capillary congestion, stasis, and diapedesis of leucocytes which have no specific characteristics. They are seen in the tuberculosis of the liver in guinea-pigs, as described by Yersin. The subsequent evolution shows the particular features in the tendency to diffusion of the sclerosis, to the formation of nodular lesions, to undergo fibrous transformation, or to extend steadily. These particular characteristics relate to the development of the disease in this organ.

NODOSE RHEUMATISM IN CHILDREN.

PERRET and DIAMANTBERGER (*Rev. mens. des Mal. de l'Enfance*, 1891) relate a case of this disease in a girl ten years old. The disease began with pains in the knees and hands when the child was seven years old. Then it attacked the great toe, the radio-carpal and metatarsal articulations. There was also swelling around the three lower cervical vertebræ. Peculiar characteristics were painful paroxysms, with contractures of the muscles contiguous to the diseased joints, and a mitral insufficiency murmur. Nodose rheumatism in children should be distinguished from the same disease in adults by the following peculiarities: many joints are involved at an early period of the disease; there is less centripetal tendency in the evolution of the lesions, the large joints being frequently involved before the fingers, and the exacerbations are of frequent occurrence. During the chronic period deformities are less frequent than with adults, and there is less atrophy. Complications are less frequent; there are no disorders of sensibility, no dystrophy of the nails, no tuberculosis, and rarely any cardiopathies. As to the evolution of the disease, subacuteness is more noticeable at the beginning. The chronic state having been established, there may be improvement and even cure. The ordinary causes are poverty and dampness, but heredity has no influence. Diamantberger recognizes an affinity between this disease and hysteria, Basedow's disease, epilepsy, idiocy, myxœdema, acromegalia, and Paget's bone disease.

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DISSEMINATED LENTICULAR CANCER OF THE SKIN—
"CANCER EN CUIRASSE."

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ON the 22d of May, 1890, I was summoned to the Presbyterian Hospital of Chicago, for the purpose of examining a patient from Iowa, whose history, as given in writing by her physician at home, was as follows :

M. C., unmarried, forty-four years of age, and still regularly menstruating, has been supporting herself by work as a milliner. Both parents, a brother, and a sister are living and in health. There is no record of disease in the family history. Some ten or twelve years ago the patient had an obscure affection of the abdomen which was then described as a "pelvic abscess," though the fact cannot be established from the statements made on this point. She enjoyed good health from that time up to the date of the outset of the present malady.

In December, 1889, she began to experience a sensation of numbness and pain along the inner side of the right arm. In a brief time this passed away, but later recurred with aggravated severity and accompanied by slight œdema of the same member. A second time these symptoms disappeared, but only to recur in April. At this date the right arm became so œdematous that it was deemed wise to puncture the skin in several places in order to permit escape of serum. At about the same time it was first noticed that the surface of the right mammary region was the seat of numerous small discrete nodules, destitute of redness and tenderness, which rapidly multiplied and became centres from which spread an erythematous blush. Eventually, but gradually, the integument of the front of the thorax became more and more extensively involved in the same way, the nodules seeming finally to

lose themselves in the thickness of the smooth, firm, discolored skin. The tissues overlying both breasts were speedily involved, and the thyroid gland became to a marked degree larger on the right side than on the left, while both tonsils and the right submaxillary gland became more voluminous than before. For three months the disease was limited to the right side of the thorax above the waist. In March a cardiac murmur became audible. The pulse was at first greatly accelerated, but during the last month it was registered at between 120 and 170 beats to the minute. The temperature has varied from 99.5° to 101° F. Anæmia has progressively declared itself; there has been also some dyspnœa and occasional vomiting of dark-brown, and even at times of blackish, matters. There has been decided difficulty in deglutition, though the appetite has not been very greatly impaired. Emaciation has progressed in proportion to the evolution of the disease.

It should be explained with reference to the notes given above, that the physicians who had consulted together respecting the diagnosis of the malady, being unable to determine its exact nature, were led to suspect that it might be a case of Hodgkin's disease, and were hence tempted to ascribe undue importance to some of its secondary, as distinguished from its primary features.

Further details of the case were given in a letter written by a sister, dated May 5th of the same year, from which it appeared that the patient had been suffering, on the 1st of January, 1890, from the epidemic disorder then prevalent and popularly known as "la grippe." Her pains were at that time described as "agonizing," and experienced in all portions of the body. Bright-red "spots" simultaneously appeared over the neck and breast. These "spots" developed into "lumps," pea- to large nut-sized, spreading over the breasts to the waist and over the right side of the neck and shoulder, accompanied by burning sensations in the parts affected. In the course of two weeks, these bright-red and somewhat glossy spots seemed very hard and had the look of a skin that has been bruised.

The following conditions were recognized on careful physical examination:

The patient was seated on her bed, dreading to assume the recumbent posture on account of an urgent dyspnœa. The temperature was registered at 100° F.; the pulse at 120 per minute; respirations labored, and thirty to the minute. Intelligence was unimpaired. There was no cardiac murmur. Auscultation of the lungs revealed the symptoms chiefly of embarrassed respiration due to compression of the chest-walls, and the consequences of this in bronchial engorgement and slight mucous catarrh. There was dysphagia due in part to the causes already mentioned, to slight fulness of the right side of the thyroid gland, and to obstruction of the circulation in the large vessels of the neck and about the throat. The general surface of the unaffected skin was pallid. Nutrition was impaired, but without excessive emaciation.

The surface affected with disease extended irregularly from the clavicles above to the waist below, anteriorly; and over the right shoulder

to the right infra-scapular region, posteriorly. The skin of the regions thus defined was in general transformed into a tissue as dense and inelastic as sole-leather, decidedly suggesting the hide-bound conditions of scleroderma. Here and there over the involved area, more thickly disposed above and upon the mammary glands, but also sparsely elsewhere, were firm, glossy, shot- to pea-sized, isolated, and reddish nodules set in the leathery skin, the larger well projected from its surface. Some of these had a varnished look; none exhibited the slightest evidence of degeneration, ulceration, or any process of involution; nor was there in any part trace of blood, pus, scales, molluscoid bodies, or points where a softish material could be expressed from the lesions. There was a single, dark-colored crust over the left nipple, which organ seemed also somewhat shrunken. This last condition was the result of a superficial non-ulcerative form of dermatitis, apparently due to the tension at this point of the over-stretched integument.

There was no tumor of either mammary gland. The process was evidently one whose chief activity was displayed in the skin and subcutaneous tissues. As a result, the breasts, of the size usually found in the virgin state, were firmly and immovably fastened to the chest-wall by the unyielding cuirass with which they were encompassed. The hue of this latter, apart from that of the nodules set in it, was a dull and dusky brownish-red, irregularly variegated by areas of a brighter reddish-brown, suggesting the hues of some forms of passive erythema. These areas—some indefinitely, others distinctly outlined—were irregularly distributed over the involved regions, being always more distinct and vivid where the morbid process in the skin was rapidly advancing. Were it not for the fact that at every point this erythematous blush stretched from an area of the densely infiltrated and even sclerotic skin, and furthermore did not disappear under pressure, one might have concluded that it represented merely a transitory cutaneous hyperæmia. Over some parts of the skin of the chest in front, but more particularly behind, these outlying erythematous borders occurred in *lanquettes* or tongue-like prolongations several inches in width, each of which without question represented the line of relatively rapid advance of the morbid process into previously uninvaded territory. These tongue-shaped frontiers were rarely the seat of the dense, reddish, glossy tubercles recognized in the regions of older invasion, where such bodies were to be seen of larger size, in greater profusion, and in closer aggregation. Briefly, in all of the regions of earliest invasion, the characteristic nodules were seated upon a surface exhibiting the highest grade of sclerosis and tinted in the duller shades of color. And, *per contra*, none of the vividly reddened patches had the cartilaginous density of the skin, for example, binding the breasts to the chest-wall. Below the two mammary regions, the dull-red, infiltrated, and leathery integument became gradually lost in the soft and flexible skin below the level of the umbilicus.

The right arm of the patient was œdematous, in circumference below the elbow, at different points several inches more than its fellow. Between the coracoid process of the right clavicle and the head of the corresponding humerus was a softish, globular, and movable tumor as large as a hen's egg, covered with an unaltered integument. It was thought to be an enlarged gland. The tonsils and thyroid gland, as explained above, with the post-cervical ganglia, were enlarged. There was no inguinal adenopathy.

Briefly the objective symptoms were: 1. Evidences of a relatively inactive process, which had resulted in transforming the skin, chiefly of the anterior surface of the thorax, into a dense, inelastic tissue, firmly binding the breasts to the chest-wall. 2. Evidences of a relatively active process, whereby the disease was encroaching upon the sound skin, particularly over the dorsal region of the chest. 3. Evidences of obstruction of the vascular channels, productive of the brachial œdema and probably also explaining the difficulty in deglutition, respiration,

FIG. 1.



"Cancer en cuirasse." (From a painting in oil of one of the author's patients.)

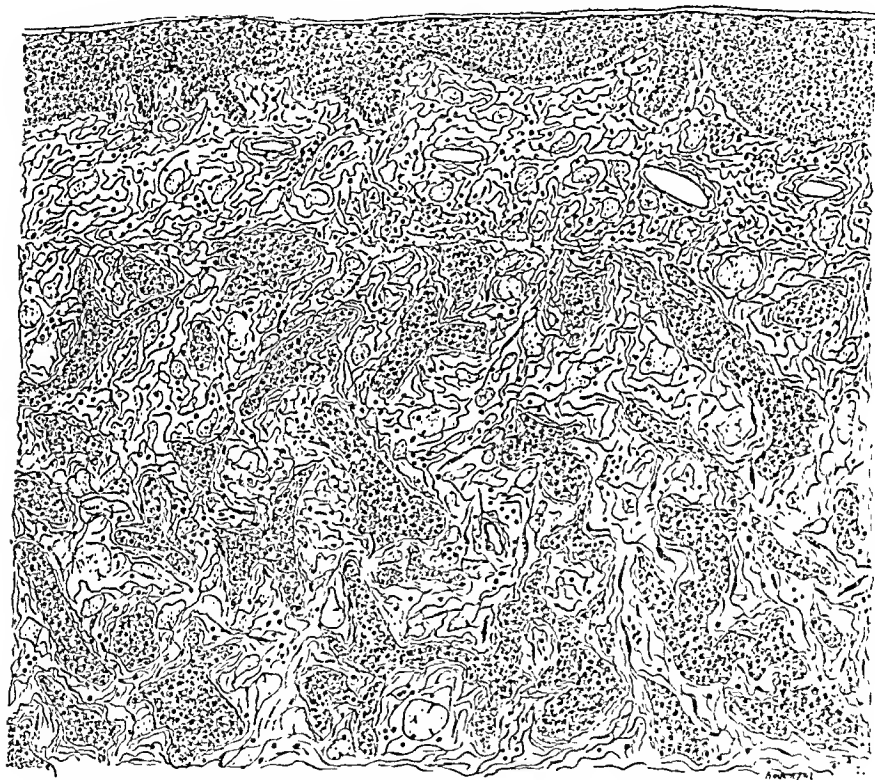
ingestion of liquids and food, and retention of ingested substances. The patient was evidently in a hopeless condition. Excision of some of the typical nodules over the right breast was performed, and the resulting wound dressed antiseptically. The macroscopic appearances were reproduced as faithfully as possible in an oil-painting, which, viewing the condition of the patient, was necessarily made under unfavorable circumstances. The friends of the unfortunate woman, on learning the conclusions reached after the examination, at once removed her to her home.

After returning to Iowa, her sister wrote that it gradually became more difficult for the patient to use her tongue and to expand the chest. An erythematous blush soon appeared over the sacrum, assumed by her

physician to result from decubitus; the pulse continued at about 120 beats to the minute. Death resulted, as he declared, from heart-failure, and without a struggle, at 6.30 A.M., June 9, 1890. The wound left after excision of the nodules was found in an aseptic condition, and was granulating. No post-mortem examination was permitted.

The accompanying figure illustrates well the appearances under the microscope of stained sections of the excised nodules. The drawings for

FIG. 2.



Showing the microscopical appearances on section of a cancerous nodule.

these were skilfully executed for the author by Dr. Eugene Hodcnpyl, assistant in pathology in the Laboratory of the Alumni Association of the College of Physicians and Surgeons, New York. It is here seen that there are no specially abnormal features of the epidermis covering the nodule, while the morbid tissue is made up of dense fibrous trabeculae, relatively non-vascular, irregularly woven into larger and smaller reticulated spaces or alveoli. These are filled with polyhedral or irregularly shaped epithelial cells. The latter completely occupy the alveoli, and evidently did not originate as offshoots from the rete

dipping down into the corium, but sprang from the embryonal epithelial masses found in the lymph-spaces beneath.

The result of examination of these sections corresponds to the observations made by Cornil after the histological examination of one of Besnier's cases of primary *cancer en cuirasse*; in this latter the connective-tissue fibres were separated by numerous large cells of epithelial type, here and there intermingled with fatty lobules, where there was evidence of a cancerous change in a brilliant "nucleolation" of the nucleus of some of the protoplasmic cells. Cornil adds that he had seen many cases of the sort, where the skin was apparently thickened as a result of chronic inflammation merely, but where a cancerous change was actually in progress.

A patient illustrating a somewhat different phase of this same malady presented herself for treatment on November 6, 1891. She was of Scandinavian nationality, and in consequence of ignorance of the English language was compelled to make known her history by the medium of an interpreter. She had brought three children into the world, had had no miscarriages, and, being then sixty years of age, had passed the climacteric in her fifty-second year. Her father, mother, and one sister had died at mature years; one sister was living in her seventy-fourth year and in good health. She gave a history of general good health; her functions being normal, though the tongue was slightly coated, and at the time of examination the alvine evacuations were loose. She stated that at times she had suffered from "rheumatic" pains in the right arm, not of a severe grade. There was—as recognized on examination—a moderate deposit of urates in the urine. Her weight was 170 pounds.

There had been pricking and stinging sensations in the left breast for nearly one year; but she thought the visible lesions over the mammary region had existed for but one month. Since their appearance she had noticed in all parts of the body chilly and hot sensations.

When examined, she was seen to be a well-nourished and well-developed woman, with no external evidences of disease save in the left mammary region. The breast was voluminous and dense, but not attached to the thoracic wall. The entire gland was evidently involved in a process which had resulted in its transformation into a dense, inelastic and irregularly enlarged mass. There was no axillary adenopathy. The nipple was involved in the disease affecting the skin of the mammary region, but was not retracted. Careful examination of the gland was rendered extremely difficult by reason of this cutaneous change.

The integument covering the breast, and to a slight extent extending above the latter toward the left clavicle, was converted into a tissue as dense as that of the sclerodermatous skin, resembling in its thickness and feeling, sole-leather. Here and there were irregularly disposed tubercles and nodules, discrete for the most part, shining, glazed, of a reddish-brown tint, split-pea to small nut-sized, and not apparently tender to the touch. There was no trace of suppuration, scaling, or discharge; and no crusting save at one portion of the surface. On the outer face of the breast was a riband of denser infiltration and dull redness, a finger's breadth in width and between four and five centimetres in length, its general

direction vertical to the axis of the body. Here was a light, dull-brownish crust, evidently due rather to degeneration of tissue than to desiccation of a discharge. Subsequent observation of the patient made it clear that this was the seat of a very active retrograde metamorphosis, the tissues day after day in this region seeming to melt down into destruction as by the searing with a caustic rather than by the slower processes of ulceration and discharge. In this respect, the process was quite like that observed in the nipple of the patient whose case is described above. The integument, which was the seat of the infiltration in the present case, was here and there—where not the seat of nodules or tubercles—discolored in dull-red blotches, but exhibited no tongue-like prolongations of advancing disease as heretofore described. Below the mammary region the skin was normal, and there was no extension of the disease above the line of the clavicle over the left shoulder. The condition of the left mammary region at this date was carefully represented in an oil painting.

This patient was subsequently brought to my clinic at the college, where she was examined also by my colleague, Professor Nicholas Senn, who concurred with me in the diagnosis of disseminated lenticular cancer (*cancer en cuirasse*), and the impossibility of securing relief by operative procedure. During the few weeks that followed, the condition of the unfortunate woman grew more pitiable daily, her strength becoming rapidly exhausted by the extension of the disease over the surface of the skin, and by the pain, which rapidly increased to a point where it became the most conspicuous feature of her malady. After fully realizing the hopeless character of her case, she was removed by her friends to a place where her rapidly approaching end might be made as painless as possible.

In this case, as contrasted with that previously described, it seemed probable that the cancerous affection of the breast had existed for some time—whether or not recognized by the patient it was, in consequence of her ignorance, difficult to determine—and that the cutaneous disorder developed as a consequence of, or at least later than, the glandular affection.

The clinical and pathological facts set forth above furnish an instructive illustration of disseminated lenticular cancer of the skin, of the grave type nowhere better portrayed than by Velpeau in his chapter entitled "*Cancer en Cuirasse*." It is a form of scirrhus cancer certainly not often encountered even in a large hospital experience. The late Dr. Gross, of Philadelphia, held that this variety of carcinoma was met with once in every fifty-one cases of cancer of the breast; but this statement surely must have related to certain forms of scirrhus of the female breast, since lenticular cancer of the envelopes of the breast is of much greater rarity than these figures would imply. This is suggested by the relatively scanty literature of the theme, a somewhat careful survey of the field disclosing merely the titles appended in a brief

bibliography, some of the cases included being of a doubtful sort—at least not illustrative of typical disseminated lenticular cancer of the skin, but rather of cancerous involvement of the skin extending from carcinomatous points in or about the mamma. Several of the authors named, it should be added, merely reproduce the classical statements of Velpeau respecting the disease, and do not claim to have had personal observation of the malady.

Surveying comprehensively the fairly admissible cases collected in this small group, we find that on almost every essential point the observations of authors are in accord with those first made by the eminent French writer whose name is well-nigh inseparably connected with the disease. The *cancer en cuirasse* affects both sexes—women in vast preponderance, and the unmarried as well as those who have been mothers of one or more children. The lesions are either single, but two or three in number, or multiple over large areas; and, in the latter event, either numerous when first observed or spreading from an infective point by peripheral extension. The lesions vary in size from small shot to beans, and even large nuts, and are described as nodules, “plates,” tubercles, or tumors. They are usually smooth and dense as marbles, but may be softish, even fluctuating. Commonly flat-topped, they are occasionally acuminate, crateriform, and yet more rarely become the seat of “fungating” processes.

They may be absolutely painless, or the seat of lancinating pains. In color they are yellowish, reddish, reddish-brown, copper-colored, purplish, marbled, mottled, and either bloodless in hue or well vascularized. They have been described as possessing a “stencilled” look. Velpeau, indeed, calls attention to the importance of early recognizing the disease on the skin of a woman’s chest, even when there is scarcely any complaint of disorder in this region, when one can detect a yellowish-red marbling of the surface or disseminated grayish points or plaques over the scarcely involved skin. The developed lesions may suggest to the eye of an observer molluscoid bodies, the tumors of keloid, “sago-grains imbedded in the skin,” or merely an integument looking like tanned leather.

The degree of involvement of the skin varies from the mildest cases, where but a few cancerous points are observed, to the extreme instances where the integument of the chest is so widely involved as to lead the French master to compare it with the metal breastplate of a cuirassier, extending from the clavicles to the navel in front, and from the neck to the buttocks behind. In the severest cases described by Velpeau (and the cases here related certainly belong to the same class) there was great complaint of a sense of constriction of the chest-wall, even when the zone of involvement did not completely gird the thorax. The sensa-

tions, beside those of constriction and pain, are usually of burning, of heat, and more rarely of pruritus. There is insomnia, dyspnœa, difficulty in assuming the supine position, anxiety, and swelling of one or both arms until these members are two and even three times their normal size. The disease may occur as a sudden aggravation of a chronic carcinomatous involvement of either the skin of the mammary region or of one or both breasts, and may be slowly or rapidly followed by fatal consequences. Death in some of the cases has been preceded by exquisite anguish in consequence of suffocative complications. In a very few instances complete involution has resulted by atrophy.

In all well-marked cases of the disease the integument covering one or both breasts and the adjacent skin is converted into an exceedingly dense, leathery, and inextensible tissue, strongly resembling the similar condition found in diffuse scleroderma of the skin of the chest. The latter is, however, distinguished with tolerable readiness from the former by the existence of the cancerous nodules in scirrhus, and the absence there of the shrivelled, scaly, and often uncolored condition of the hide-bound skin. The outlines of the "cuirass" also in the cancerous conditions are commonly well defined, while there is an indefinite contour to the similar conditions of scleroderma, that is, when the latter is in large diffuse areas and is not strictly circumscribed. Lastly, the relative rapidity of development of the cancerous growth as distinguished from both scleroderma and tuberculosis or lupus vulgaris is highly suggestive.

The tumefaction of the soft parts of the upper extremity, one and both, but usually of one side only and that the side of greater involvement of the breast surface, is an almost constant symptom of the disease, and should always excite suspicion when simultaneously a firm mottling or marbling of the skin is detected. In one of the cases here recorded it was noticed among the earliest symptoms of the disease. The swelling is usually more marked in the forearm than in the upper arm, and was a distressing feature of not only the case under consideration, but that of a patient with similar, less typical symptoms under my observation two years ago. It is described by Velpeau and others who have followed his lucid accounts of the disease; and is well shown in the admirable portrait accompanying Morrow's description of a classical case, a colored photograph of the same having been kindly sent me by the author for the purpose of minutely comparing its features with those of the patient shown in the accompanying figure. I believe it to be true that this tumefaction of the arm is not wholly due to the inextensibility of the cutaneous covering of the chest, but in large part to obstruction of the intra-thoracic vascular channels. These special features forcibly recall the expression employed by Billroth in describing such cases,

viz., that "the spread of the disease is like that of chronic lymphangitis."

Among the cases here collated, that reported above seems to be unique in an unusually rapid career. One is inclined, indeed, to believe, in glancing over the record given, that an insidious involvement of the skin had progressed unnoticed for some months before the attention of the patient, or at least her friends, was directed to the mischief at work. In this particular it resembles one of the histories recorded by Velpeau, in which a fatal termination occurred in a twelvemonth. In this, as distinguished from other forms of cancer, one cannot fail to recognize the fact that the obstructive complications of the disease, furnishing a serious impediment to the circulation of the vital fluids in the body, open a wide door to the ingress of accident. The very grave prognosis which one naturally formulates, after observation and study of the severer forms of this affection, is offset by the statements of a few writers like Satterthwaite, of New York, who apply the title *cancer en cuirasse* to certain less grave symptoms of scirrhus—whether of the breast or of the skin covering the breast cannot, perhaps, be in all cases determined. Certain it is, however, that whether as a primary or secondary occurrence (and the relative frequency of the two cannot, with the data at hand, be established), the danger in most cases is great, and the possibility of a more or less speedily fatal issue not to be disregarded.

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A NEW METHOD OF INTESTINAL SURGERY.

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THE following method of intestinal surgery was devised by me ten years ago.

At that time intestinal resection was in its infancy and surgeons had hardly begun to "feel for daylight" in this department of abdominal surgery. During the last few years the journals have teemed with discussion on this very important branch of conservative surgery.

OPERATION.

With thorough aseptic precautions make an incision in the median line of the abdomen, sufficiently long (exventration, if necessary) to enable you to thoroughly search the abdomen for the wounded or diseased portion of the gut.

Having found the part to be excised, bring it outside the abdomen with four to six inches of healthy gut on either side. Empty it of its contents by gently squeezing it between the fingers and thumb. Clamp the empty gut in two places from four to six inches above and below the portion to be excised. Pack well around with warm, large, flat aseptic sponges.

LATERAL LAPAROTOMY should be performed in all operations on the appendix vermiformis, cæcum, or any part of the colon. Make an incision over the diseased or injured structure.

New clamp for bowel. Place a small flat sponge across the intestine, about four or six inches from the part to be excised, transfix the sponge and the mesentery close to the gut with a strong safety-pin. Pass the pin again through the sponge on the other side of the gut and clamp the pin, or better still, have two clamps prepared for immediate use with the sponges sewn firmly to the arched portion of the safety-pins. The sponge should be sufficiently large to compress the intestine

against the pin, so as to effectually prevent extravasation of the contents.

The advantages are its extreme simplicity, its easy applicability, its innoxiousness, and its efficiency. The pressure can be regulated by the size of the sponge.

Neuber recommends a narrow elastic band to be passed through a small opening made in the mesentery, close to the intestine, at a suitable distance from each end of the piece of intestine to be removed, and tied around the gut to prevent the passage of feces and flatus. I have tried this method and found that the bowel may be injured by the ligature, no matter what care may be taken in applying it.

Sir William MacCormac, who wrote a paper on "Intra-peritoneal Injury" for the *Lancet*, May 7, 1887, says he has abandoned all artificial clamps and relies alone on the pressure of the fingers and thumbs of his assistants.

I believe an artificial clamp to be always necessary. An assistant's hands are often in the way and may relax long before the completion of a long operation.

SUTURE OF THE INTESTINE.

A wound in the longitudinal axis of the bowel may be easily sewn up with a continuous suture of chromicized catgut, fine silk, or carefully selected horsehair passed through the peritoneal and muscular coats.

A transverse section of the intestine should never be sewn up with a continuous suture, for the following reasons:

1. The diameter of the intestine is always varying.
2. As the stitches never cut out simultaneously, they would form loops inside the intestine, which would be liable to catch or be dragged, or torn out by the onward movement of the contents of the bowel.
3. A continuous suture might cause gangrene of the inverted circular margin of the cut ends of the bowel by uninterrupted strangulation of its coats.

The simple co-adaptation of peritoneal surfaces will not secure their firm adhesion by plastic lymph, but the irritation of the circumferential line of sutures causes a band of organizable plastic peritonitis which assures their ultimate permanent union.

Circular enterorrhaphy is a poser which requires some solving.

When the entire circumference of the gut is involved in the wound, the bowel must be invaginated so as to bring the encircling peritoneal surfaces into accurate juxtaposition all around, and suture them in that position.

How is this to be accomplished?

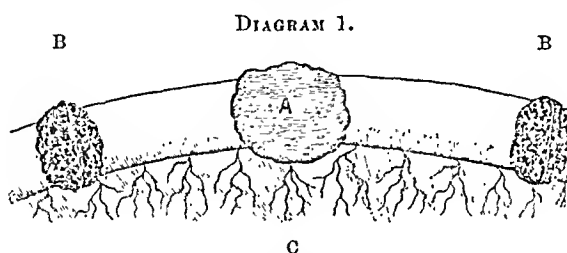
When Nature performs enterectomy successfully, she invaginates the upper portion of the intestine into the lower, and when the peritoneal

surfaces around the neck of the invagination have united by adhesive inflammation, the intussusceptum or invaginated bowel sloughs off with impunity.

Several cases are recorded where five or six feet of the ileum have sloughed off in this way, and a case is recorded where a patient lived seven months after the successful excision by Nature of the cæcum, vermiform appendix, and six or seven feet of the ileum. Let us copy Nature as closely as possible when excising a diseased, gangrenous, or injured portion of the gut.

Apply torsion or ligature to the arteries separately as they are divided; this is to be preferred to tying the mesentery in sections with fine silk.

I will now, by a series of diagrams, endeavor to demonstrate the different stages and applications of this operation.



Jejuno-ileostomy or ileo-ileostomy.

A. Cancerous, gangrenous, or injured portion of the intestine. B, B. Sponges with safety-pins clamping the empty bowel four or five inches on either side of the diseased or injured structure. C, C. Mesentery.

Having cut off the cancerous, gangrenous, or injured portion of the intestine, bring together both cuds of the bowel with two temporary sutures passed through *all the coats* of the intestine. The long ends of these sutures are left intact. One is placed at the mesenteric attachment of the gut and the other (exactly opposite) at the most distant portion of the bowel from the mesentery.

These temporary sutures are very important. They secure the complete peritoneal covering of the mesenteric attachment of both segments of the gut, help to maintain the proper relative position and accurate co-adaptation of the two cut ends, and facilitate their subsequent invagination through the opening made in the larger segment of gut.

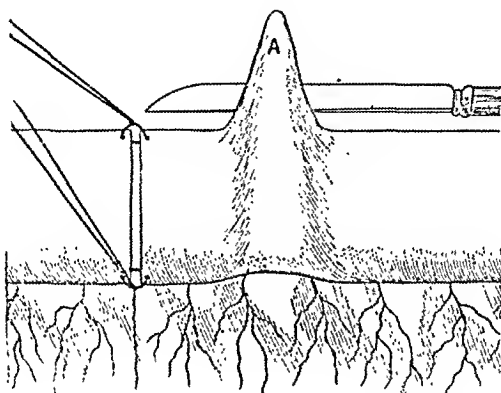
Where enterectomy is performed for gangrene or injury, the lower or distal segment of the bowel is generally the largest; but where the operation is performed for stricture, cancer, or tumor pressing on or constricting the lumen of the gut, the upper or proximal portion is often much larger than the lower.

If you examine the gut in a living animal you will find that the bloodvessels pass into it from the mesenteric attachment. These divide

and subdivide until they are lost in an invisible anastomosis in that portion of the intestine more distant from the mesentery.

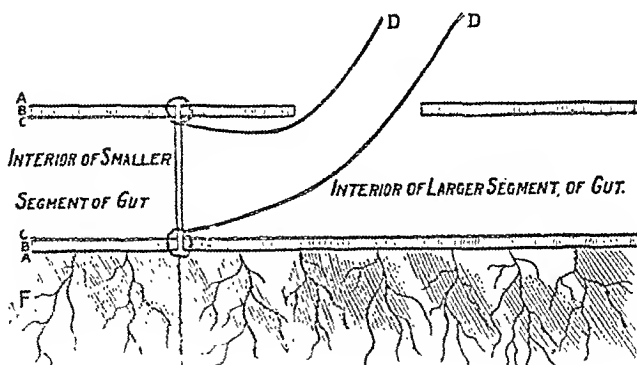
I propose to make an opening here in the larger segment of the gut, through which the invaginated ends of the divided bowel may be dragged by the long ends of the temporary sutures, and when they are accurately sewn together all around they may be pulled back into their normal position.

DIAGRAM 2.



A. Longitudinal section (about an inch and a half long) with tenotomy knife, of that portion of the larger segment of gut which is opposite to its mesenteric attachment. This opening should be made about an inch from the severed end of the larger segment of bowel; its length depends on the size of the gut to be invaginated. In performing this part of the operation, pinch up the coats of the intestine between the finger and thumb and divide with a tenotomy knife or pair of scissors.

DIAGRAM 3.



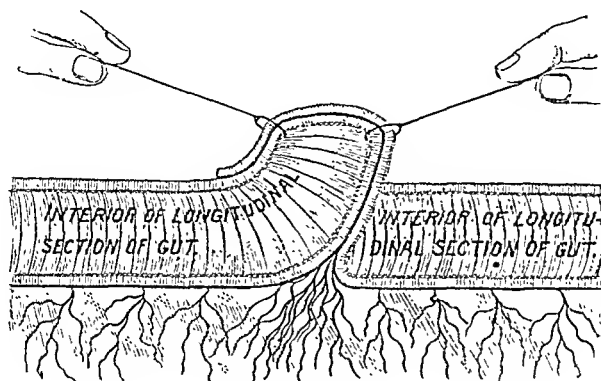
Longitudinal section of gut, showing—A, A. Peritoneal coat. B, B. Muscular coat. C, C. Mucous coat. D, D. Temporary sutures passed into the bowel and out through the longitudinal slit made in larger segment of gut. F. Mesentery.

The edges of the longitudinal slit made in the bowel, which begins about an inch from its transverse section, should be well *turned in* and brought together with a continuous suture passed through the peritoneal and muscular coats only. It is a well-ascertained fact that a slight

longitudinal contraction of the lumen of the bowel does not interfere with its physiological functions.

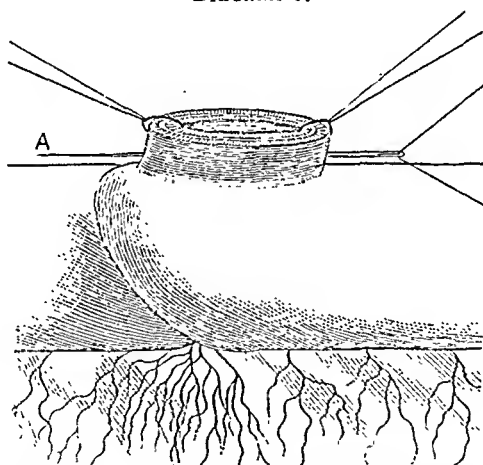
By this simple device, the perfect union by suture of a complete transverse section of the bowel, with its circumferential peritoneal surfaces in exact position and all the knots of the sutures on the inside, can be accomplished.

DIAGRAM 4.



Longitudinal section of intestine, showing the relative position of the different layers of the bowel, invaginated at the longitudinal slit.

DIAGRAM 5.



Invaginated gut, showing the two peritoneal surfaces in juxtaposition all around.

A. Needle passed through both sides of the bowel, including all the coats—introducing two sutures with one passage of the needle.

From diagram 4 it may be seen that the peritoneal surfaces are in accurate juxtaposition all around. While an assistant holds the ends of the temporary sutures, the surgeon passes a long, *fine*, straight needle, armed with a stout horsehair or *very fine* silkworm-gut through both sides of the bowel, taking a good grip (quarter of an inch) of all the coats. The suture is then hooked up from the centre of the invagi-

nated gut, divided, and tied on both sides. In this way twenty sutures can be placed rapidly in position with ten passages of the needle. (See diagram 5.) The temporary sutures are now cut off short and the sutured ends of the bowel painted with Woelfler's mixture of alcohol, glycerin, and colophony, and blown over with iodoform, the same that he applies to the surface of the raw stump after removal of the tongue. The bowel is then pulled back. The longitudinal slit in the gut is well turned in and closed with a continuous suture and painted with Woelfler's mixture and iodoform powder.

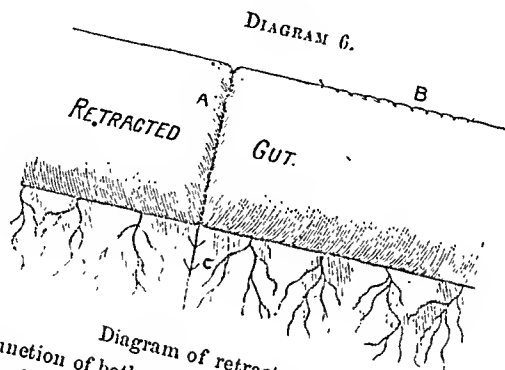


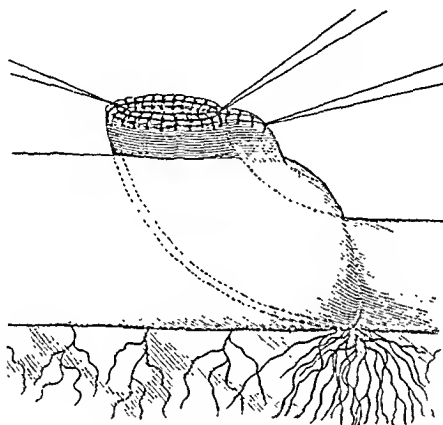
Diagram of retracted gut.
A. Line marking junction of both ends of bowel, the peritoneum well turned in, and the sutures and knots all inside the gut, making an almost invisible air- and water-tight joint. B. Longitudinal slit in bowel, sewn up with continuous suture. C. Sutures in the mesentery; seldom necessary to put more than one or two.

In all cases of obstruction from irreducible invagination, where rectal hydrogen inflation in the inverted position under chloroform has failed to reduce the intussusception, perform laparotomy. Having found the intussusception, first try uniform compression of the invaginated portion and gentle traction of the bowel in the usual way above the neck of the intussusciens. If this fails, instead of completely excising the intussusciens with the intussusceptum, as is generally advocated, or diverting the invaginated block from the physiological functions of digestion and assimilation in the manner so ingeniously devised by Professor Senn, of Chicago, proceed to resect the intussusceptum in the following manner:

Gently withdraw the intussusceptum until its neck appears outside the slit in the intussusciens. Transfix the base with two fine, straight needles armed with strong horsehair, chromicized gut, or fine silkworm-gut. Now amputate the intussusceptum a quarter of an inch clear of the needles so as to leave a fair stump beyond them. Transfixing the neck of the intussusceptum previous to its amputation prevents it from flying back inside and insures the proper relative position of the different layers of the bowel previous to sewing them up.

Having amputated the intussusceptum, pass the needles through and pick up the suture in the middle of the invaginated bowel, divide it, and suture the bowel on both sides; leave the ends of the four sutures long, so as to hold the cut ends of the bowel in position, until it is completely sutured up circumferentially. Now cut off the long ends of the sutures, apply Woelfler's mixture, blow over with iodoform, and withdraw the bowel. It now only remains to sew up the longitudinal slit with a continuous suture.

DIAGRAM 7.



Rough diagram showing acute irreducible invagination of the small intestine; longitudinal section.

Shows strangulation of the intussusceptum at the neck of the intussuscipiens. Circumferential peritoneal adhesive inflammation has taken place at this junction, causing constriction of the veins, and stasis, œdema, and gangrene commencing at the tip of the intussusceptum.

In three-fourths of the cases of intestinal obstructions occurring in children, invagination is the cause of the block. Treves says 30 per cent. of all cases of intestinal obstruction, exclusive of hernia, are due to invagination.

If there is a decided difference in the lumen of the segments of bowel to be united, put three temporary sutures through all the coats of the greater and lesser segments of the bowel, leave their ends long, taking care to accurately adapt the mesenteric arc or segment of the larger circle of bowel to the circumference of the smaller, by the first two sutures, leaving the third for the free cut end of the larger bowel most distant from its mesentery.

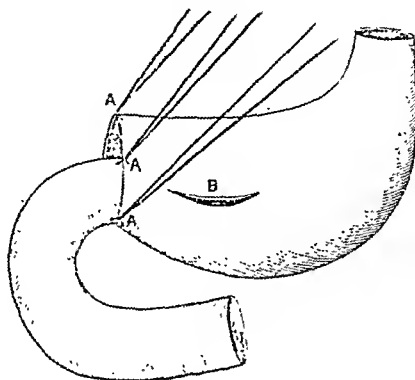
Invaginate the lesser into the larger segment and draw them out with the long sutures through a longitudinal slit made in the convexity of the larger bowel, one inch from its cut end.

When there is great disparity in the lumen of the two ends of the bowel, it is advisable to remove a small V-shaped portion from the convexity of the larger and round it off by suturing.

Now cut the sutures short and withdraw the invagination, and suture up the longitudinal slit in the usual manner.

GASTRO-PYLORECTOMY.—If the disease is confined to a *very small* portion of the pyloric end of the stomach, it may be excised completely as indicated in diagram 8.

DIAGRAM 8.



A, A, A. Temporary sutures, with ends intact, uniting cut surfaces of stomach and pylorus. B. Longitudinal slit in stomach, made by pinching up its coats between the finger and thumb, and transfixing with a tenotomy knife. Through this opening the invaginated cut ends of the pylorus and stomach are passed, when they can be sewn up from the inside, and then retracted to their normal position; the longitudinal slit being sewn up with a continuous suture.

On account of the normal semi-fixed condition of the greater portion of the duodenum, the application of this operation is limited to cases where there is only a small amount of disease confined to the pyloric end of the stomach.

When there is extensive disease of the pyloric end of the stomach and the upper portion of the duodenum, it may be deemed prudent for many reasons not to attempt the removal of the mass.

Under these conditions gastro-jejunostomy or gastro-intestinal anastomosis may be performed in the following manner:

1. Draw out a portion of the jejunum as close as possible to the duodenum, empty it of its contents by gently squeezing it, and apply the sponge clamps in the usual manner.

2. Gently draw the greater curvature of the stomach into the wound.

3. Place the jejunum along the greater curvature of the stomach and proceed to unite them in whatever position they lie naturally, with least strain or kink.

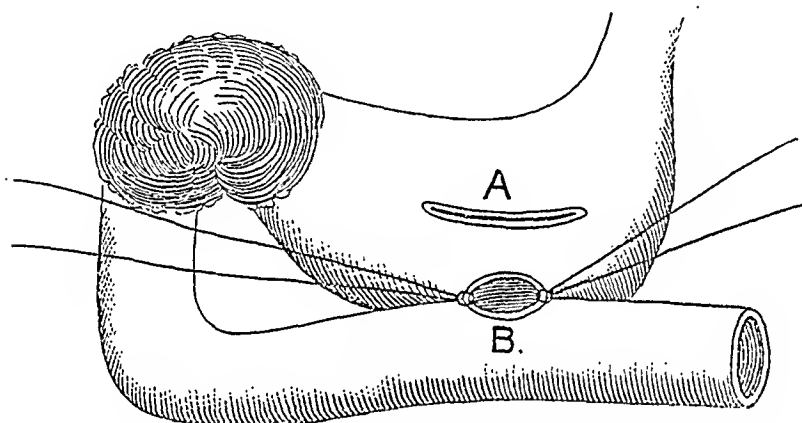
4. The opening in the longitudinal axis of the jejunum should be slightly over an inch long and in that portion of the gut most distant from the mesentery. The corresponding opening in the stomach should be in the line of its greater curvature and one inch above it.

5. Unite the corresponding extreme ends of the wounds in the jejunum and stomach, with temporary sutures passed through the entire thickness of the walls of the stomach and jejunum, leaving the ends of the sutures long. Make an opening in the centre of the stomach sufficiently long to permit the *easy invagination* of the corresponding openings in the stomach and jejunum.

6. Having invaginated the two openings, sew them up all round as previously described, passing the needle through all the coats of the intestine and stomach.

7. Now retract the firmly approximated openings to their normal position, and sew up the longitudinal slit in the stomach with a continuous suture passed through its peritoneal and muscular coats.

DIAGRAM 9.



A large cancerous mass involving the pyloric end of the stomach and the upper part of the abdomen.

A. Opening in the centre of the stomach (where the vessels are very small) through which the corresponding openings (united by temporary sutures), B, made in the longitudinal axis of the upper end of the jejunum and in the line of the greater curvature of the stomach, may be invaginated and sutured round in the usual manner from the inside.

Withdraw invagination and sew up the slit in the centre of the stomach with a continuous suture.

When intestinal anastomosis is established, the portion of bowel cut off from the digestive functions has complete rest ; active disease is often arrested, and it soon becomes atrophied.

The upper part of the jejunum is joined to the stomach an inch above its greater curvature.

The peritoneum is well turned in all round, and the sutures and knots all inside the stomach, making an almost invisible (from the outside) air- and water-tight junction.

The longitudinal slit in the centre of the stomach is sewn up from the

outside with a continuous suture carefully passed through the serous and muscular coats.

Where the disease is located in the cæcum, ileo-cæcal valve, and appendix, one or other of the following operations may be performed:

ILEO-COLOSTOMY.—If the diseased cæcum, ileo-cæcal valve, and appendix cannot be safely excised owing to old-standing recurrent inflammation having firmly matted the bowel to the right ureter and the iliac vessels (as I have seen on several occasions), perform ileo-colostomy.

1. Empty the diseased cæcum and colon end of ileum.
2. Apply the sponge clamps to the healthy ileum and colon four inches off the disease.
3. Invaginate the cut end of the ileum attached to the cæcum and sew it up with a continuous suture.
4. Make a slit on the convex surface of the colon sufficiently long to just receive with very slight constriction the cut end of the ileum; secure with two temporary sutures, leaving the ends long.
5. Make a slit in the colon an inch higher up or an inch lower down in the cæcum, whichever is most convenient for the invagination.
6. Pass a dressing forceps through the slit and seize the two ends of the temporary sutures.
7. Drag the invaginated cut end of the ileum and its corresponding opening in the colon out through the slit.
8. Suture carefully all round and pull back to its normal position.
9. Sew up the longitudinal slit with a continuous suture.

ILEO-COLOSTOMY.—Clamp the ileum and colon; completely excise the diseased cæcum and appendix.

Insert the cut end of the ileum into the healthy colon two inches above its cut end. Apply the two temporary sutures and invaginate them through the cut end of the colon; sew up all round. Withdraw the invagination. Finally close the cut end of the colon with a continuous suture, having invaginated it within itself to the extent of an inch.

ILEO-SIGMOIDOSTOMY.—This operation may be performed where the seat of obstruction is located low down in the colon near the sigmoid flexure. An artificial anus leaves a man in a loathsome condition, and should only be made in cases of obstruction from disease below the sigmoid flexure of the colon.

CONCLUDING REMARKS.

The simplicity of this operation and the universality of its applicability to all parts of the intestinal tract, may be taken as a measure of its perfection. It is the only operation as yet devised where rapid circular enterorrhaphy (the sutures passing through all the coats of the bowel, leaving the knots on the inside), can be accomplished.

Firmly suturing *all the coats* gives great healing capacity to the ends of the bowel, and the stitches are not likely to tear out.

The most important element of success, next to the efficiency of the operation, is its speedy performance.

After one has isolated the bowel to be resected with the sponge clamps, circular enterorrhaphy by the above method can be accomplished in ten minutes, which is less than half the time required for lateral apposition (intestinal anastomosis) with decalcified bone plates.

I find *this operation is especially easy in man*, for the coats of the bowel are thin and the lumen correspondingly large, so that invagination may be accomplished with marvellous ease. I have performed this operation successfully on very small dogs, where the coats of the bowel are very thick and muscular as compared with the lumen.

Professor Senn says: "I am convinced that circular enterorrhaphy, as it is *now* commonly performed, is attended by three great sources of danger:"

1. Perforation at the mesenteric junction not covered with peritoneum.
2. Length of time required in performing the operation.
3. Number of sutures required.

To obviate the danger of perforation at the junction of the bowel not covered by serous membrane, the temporary suture at the mesenteric attachment is passed through all the coats of the bowel previous to invagination and so *draws the peritoneum over the denuded space at the attachment of the mesentery*. This secures for the whole circumference of the bowel a perfect peritoneal covering.

As to the *length of time required* for the operation, this is a most important consideration. Professor Senn says: "Even after I had acquired a fair degree of manual dexterity in suturing the bowel, I seldom spent less than an hour in making a circular enterorrhaphy with a double row of sutures."

The Czerny-Lembert method of suturing the bowel causes great delay, as the surgeon has to pick up carefully the peritoneal and muscular coats of the bowel, thirty or forty times, *if possible*, without perforating the mucous coat. Lastly, the double line of sutures may cause gangrene between the stitches.

In the operation I advocate there is no necessity to apply Nothnagel's test to determine the direction in which the invagination should be made. In circular enterorrhaphy with the aid of a rubber ring as recommended by Professor Senn, it is necessary to find which is the afferent and which is the efferent part of the tube, so as to make the invagination in the right direction.

In practice the proximal is often the largest end of the bowel, which

renders it very difficult and often impossible to force it into the distal end.

I have seen Nothnagel's test signally fail. I need say no more in condemnation of this operation.

Professor Senn has done much to advance intestinal surgery. His method of intestinal anastomosis by decalcified plates is ingenious, but I refuse to accept it as the right method, for it is clumsy and unsurgeon-like.

The mere approximation of the *vis a-vis* openings in the plates by *four sutures* is often successful in the dog, where the coats of the bowel are very thick and muscular as compared with the lumen. In man the coats of the bowel are very thin as compared with the lumen, and it is always necessary to apply a continuous line of sutures through the peritoneal and muscular coats, both behind and in front of the plates. These additional or supplementary sutures necessarily prolong and seriously complicate the operation.

Before performing any operation on the bowels, it is advisable to irrigate the stomach and rectum with hot water. It prevents sickness and flatulence after the chloroform.

In flushing the abdominal cavity with sterilized hot water, it is advisable to place a tube in each loin, as recommended by Mr. Barker, of University College Hospital.

In searching for a diseased or injured portion of the gut, time is often saved by making a very large incision, so that the lesion can be seen as well as felt.

Mechanical control of the bowels. In performing exventration or extensive laparotomy many contrivances are adopted to keep the bowels backward toward the spine and upward or downward, as the case may be. How is this to be done? Sponges only fill the abdomen and do not retain the omentum and intestines in the position most convenient for the operator. Assistants' hands occupy too much room and are often in the way.

I find the following device very simple and efficient :

Make three strong copper-wire frames, four, five, and six inches square. These three sizes are quite sufficient for all cases of exventration. A few minutes before operating cover them with three- or four-ply of aseptic gauze, and sew it firmly to the framework. Fasten a strong eighteen-inch suture with a straight needle attached to each corner of the framework.

When one has performed an extensive laparotomy and found the bowel lesion, pass in a suitably sized frame covered with gauze and bend it, so as to keep the bowels in the required position. To retain it in this position pass the sutures from within outward on the outside of the

quadratus lumborum and fasten them with a stiff rubber sliding clip, or, better still, to a wire retractor holding back the edges of the wound. In some cases it is only necessary to fix one suture on either side.

This method—with the sutures fastened to the wire retractors—

1. Gives a fine view of the lesion to be operated on.
2. Insures the bowels being kept warm and out of sight from the beginning of the operation until the end.
3. Is extremely simple and efficacious.

Operative surgery being a purely mechanical science, it is best taught by a series of diagrams with explanatory notes.

The education of the surgeon is too much of the book—bookish. No man should pose as a surgeon unless he has had some mechanical training. As a boy, he should be taught to use a needle and thread, carving tools, and to draw, so that the hand may work in unison with the brain.

Sutures for the bowel. Fine silk is recommended in all text-books for sewing up the gut.

I find horsehair or fine silkworm-gut far the best.

Silk sutures, when wet, are very sloppy to work with. They swell up and often cause suppuration in their track, and so may become the seat of perforation.

None of these disadvantages apply to horsehair or fine silkworm-gut. Horsehairs, if carefully selected, make the best sutures. They should be taken from the tails of large draft-horses.

The hair from the mare's tail is unreliable, as it is often rotten from the urine.

Carefully select all the longest and strongest hairs, *without a flaw in them*, tie them together at one end and have them well brushed in soap and water. Put them to soak in a bichloride solution (1 : 4000) for two or three hours. Shake them out and place in a large glass-stoppered bottle, where they may be kept clean and free from dust. Before using the hair leave it soaking for two or three hours in water (bichloride solution, 1 : 5000)—*it makes the hair pliable* so that it may be tied in a firm, fast knot without fear of cracking. This fact is well known to all fly-fishers, who put their silkworm-gut to soak in water a few hours before using it.

I find that nearly all the horsehair used in the London hospitals is rotten. If not brittle when first obtained, it becomes so by being kept in water for months before using. Silkworm or salmon gut will become brittle under the same condition.

THE AFTER-TREATMENT IN OPERATIVE SURGERY.¹

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It is my custom to send word to the relatives or friends, waiting outside the operating-room, that the operation has been concluded as soon as I begin to apply the sutures. This is a comforting piece of information to those whose anxiety is, perhaps, not realized by the operators and assistants.

I never leave a patient who has been under ether without first assuring myself that the pulse is good and seeing that he is conscious, unless I leave a competent physician in attendance. The directions for after-treatment, unless a trained nurse is present, are usually given in writing and in as detailed a manner as possible.

For the treatment of shock I elevate the foot of the bed, have cans or bottles of hot water placed about the body, and, if necessary, administer digitalis, atropine, ammonia, or strychnine, either by the mouth or hypodermatically. I seldom give any form of alcoholic stimulant during or after etherization, because I believe alcohol and ether to be so similar in physiological effect that their joint administration is unscientific and, perhaps, harmful. An enema or suppository of quinine I often use after operation, and sometimes before, to diminish or avert shock. In moderate degrees of shock I simply let the patient alone, since time is all that is required to restore the functions to their normal vigor. Too much is often done in cases of operative or accidental shock, because the physician is over-anxious and does not give the system time to react; hence the patient is "inundated" with broths, milk, coffee, and stimulants, and, perhaps, poisoned by over-dosing with drugs.

The preliminary hypodermatic injection of morphine and atropine, always given a quarter or a half hour before commencing anæsthesia, probably lessens the shock, and without much doubt diminishes the tendency to vomiting after etherization has been discontinued.

For the nausea and vomiting which occurs after inhalation of ether, I usually do nothing except to have the patient's head so placed that any ejected material may easily escape from the mouth. Little actual vomiting occurs if the patient has been given the preliminary hypodermatic injection; and especially so if he has taken no food for several hours before the time of operation. The practice of giving drugs to combat the vomiting is, I believe, unnecessary and unreasonable, unless the vomiting should be prolonged and evidently depressing to the

¹ Read before the Philadelphia Academy of Surgery, November 2, 1891.

patient. Draughts of hot water for the relief of ether vomiting are given by some physicians, and in some cases may be desirable, as retching when the stomach is empty is often more disagreeable than vomiting water which has been put into the stomach.

I prefer the room kept at a temperature of about 70°, with plenty of fresh air so admitted that the patient shall not be directly in a draught. Too much air is better than too little. The cold rooms and wards found in English homes and hospitals would, however, be objectionable to the average American patient. A hygienic rule which gives to every hospital bed about 100 square feet of floor surface, or about 2000 cubic feet of air space, is desirable. In many places it is impossible to procure this desirable condition. It is to be recollected that the height of a ceiling, without floor space, does not necessarily give good ventilation. I always prefer operating in a hospital rather than in a private house, since the after-treatment can be much better carried out in a modern well-conducted hospital than in any other place. A room in which the sun enters is preferable to one on the shady side of the house. It should be free from contamination by water-closets or badly-drained washstands.

I believe that curtains and bed-hangings are not objectionable if the operation is conducted and wound-dressings arranged on thorough aseptic or antiseptic principles. The absorbent materials employed in furnishing our houses are objectionable because they retain dust-particles, but this microbe-bearing dust is harmless if it does not come in contact with the wound. I frequently say to my students that I would willingly operate in an amphytheatre containing many thousand persons, if the dust was not stirred up by draughts and the stamping of feet; provided that the seat of operation, my finger-nails, instruments, dressings, and assistants were thoroughly aseptic or antiseptic. I further believe that pretty articles of furniture, pictures, and even flowers, if the odor is not too strong, add to the comfort of the patient by diverting his attention from himself. Freedom from excitement is desirable during convalescence, but the occasional visits of judicious and cheery friends relieve monotony and do no evil. Such friends bring items of news and interest to the invalid which cannot be gotten from those he sees daily. An intelligent nurse, previously unknown to the patient, may increase the value of her ministrations by a wise exercise of conversational powers.

The nursing in operative cases should, in my opinion, usually be done by someone not connected with the patient by ties of relationship or friendship. The ideal attendant, who is calm, deliberate, wise, firm and gentle, can do much toward hastening the recovery of the patient, and certainly adds greatly to his comfort. I do not consider these qualifications to belong to a nurse who takes the temperature every few minutes, who uses the catheter every few hours, or who wakens the patient at night to ask how he feels.

It goes without saying, that the excretions and soiled dressings should be well disinfected and promptly removed.

The best posture for the patient after operation depends somewhat on the character of the operative procedure to which he has been subjected. A comfortable position without causing muscular strain, and the one which favors drainage, when that is demanded, is the preferable one. It is not necessary that the patient should lie absolutely rigid and motionless upon his back in any case. It is not an uncommon thing for me to find that after operation a patient has lain for eighteen or twenty-four hours, scarcely moving a muscle, except those of the arms and legs. This, practically always, is unnecessary and unreasonable, and is due to fear on the part of the patient or nurse. It is sometimes the result of unnecessary precautions drilled into nurses' minds by surgeons after abdominal operations. The patient can, with safety, be turned a little by having a pillow pushed under the hip and shoulder of one side. This prop may be changed from one side to the other, at intervals, thus securing him much comfort. A change of posture, with or without friction of the limbs and trunk with whiskey or alcohol, relieves the points of pressure on the mattress, and prevents the muscles from becoming stiff.

Many patients are not allowed to sit up as soon as they might, and are kept in bed far too long. Amputation of a breast with clearing out of the axilla, for instance, is not a cause for retaining the patient long in bed. In such a case there is no objection to the patient sitting up on the second day, or going about the house and garden in two or three days, if the temperature and pulse are normal. Of course, this matter must necessarily be varied with the character of the operation, the course of the case, and the temperament of the patient. I am convinced, however, that too many restrictions are often put upon patients because of the traditions of surgeons before the aseptic era.

Many cases need little or no medicinal treatment subsequent to operation. The wound, if it continues free from suppurative or septic infection and is not irritated by too tight sutures, is practically painless. The immediate smarting of the wound, often very slight and at times altogether absent, is to a great degree avoided by the preliminary hypodermatic injection of morphine and atropine. Acute pain after operation usually means that the sutures are too tight, the dressings badly applied, or that the wound is not free from bacterial infection.

Because of the discomfort occasioned by the surroundings and the restraint of the dressings, and because of the nerve strain of the day, I, as a rule, give bromide of potassium and chloral toward bedtime of the day of operation, and, perhaps, also the next night. I usually give forty grains of potassium bromide and fifteen or twenty grains of chloral. Sometimes it is necessary to repeat this dose once or twice during the night, at intervals of about an hour. This anodyne I administer more

for the purpose of allaying the nervous excitement than because there is actual pain. It has not the objection of morphine, which diminishes the secretions, constipates the bowels, and impairs the appetite.

Ordinary cases need no other medicinal treatment, except an occasional laxative to keep the bowels open. I agree with Dr. Agnew, a former president of this Academy, who says: "So long, however, as a patient is doing well, drugs are an impertinence."

If there has been much bleeding, I give iron and quinine as a tonic, and occasionally I use these drugs as a placebo when there has been no special hemorrhage. Opiates are always to be avoided in the after-treatment, if possible. The stress recently laid upon this point by abdominal operators is simply an axiom of good general surgery which I have long followed. The use of frequent doses of opiates indicates in most medical and surgical conditions an unwise physician or surgeon. Their administration masks symptoms, interferes with secretion, and is liable to establish the opium habit. If I am obliged to use morphine or opium, I do not give it hypodermatically, as this method is the most seductive. The name of the drug used is not mentioned in the patient's hearing.

The various antipyretics now so fashionable, I practically never use. The elevation of temperature, which occurs in aseptic cases within about thirty-six hours after operation, which is supposed to be due to absorption of fibrin ferment, needs no treatment; nor does fever resulting from nervous excitement. A rise of temperature presumably due to septic changes in the wound is to be treated by renewal of the dressings, irrigation of the wound, cutting of sutures, or cleansing of drainage-tube rather than by medicines which act simply by depressing the temperature. They afford the surgeon a false sense of security and may mask the true condition of the wound. Like opiates, they conceal truth, perturb the normal functions, and simply combat a symptom which is meant by Nature to call the surgeon's attention to the fact that his work needs revision.

A smoker may be allowed his cigar a few hours after operation, unless there is special objection to its action upon his nervous system. A cigar, when the patient is accustomed to the use of tobacco, will often take the place of an anodyne.

The bladder must be emptied and the bowels opened, of course, and I make it a rule to especially inquire, of both patient and nurse, as to these matters. There is no need, in most cases, however, of a nurse catheterizing a patient within a few hours after operation. Retention of the urine for twelve or fifteen hours will, in ordinary cases, do no harm, and the early use of a catheter, except, perhaps, in abdominal operations, is an unnecessary annoyance, and a discomfort to the patient. It is, also, liable to make necessary the frequent use of the catheter when such

necessity would not have arisen if the urine had not been drawn for the first time.

The question of diet is an important one, as to which surgeons vary very much in practice. Ordinarily, I allow no food for six or eight hours after the recovery from etherization, and I instruct the friends of the patient that no harm will be done if food is not taken until the next day. In abdominal cases I insist that no food whatever shall be taken for at least twenty-four hours. I usually prescribe milk and broth as the diet for the first few days, but I rather avoid milk in abdominal cases. I rarely use extracts of beef or any of the pre-digested foods; but this, perhaps, is due more to the fact that I find milk or broth made in the household quite sufficient for my purpose, than that I have any objection to these articles.

A liberal diet of easily digested food, such as milk, toast, baked potatoes, and light puddings, is not objectionable after three or four days; in truth, I defer a great deal to the patient's wishes and taste in this particular. The old idea that patients must be half starved to prevent inflammation, is erroneous, since any violent inflammation which occurs subsequent to operation is practically always mycotic.

In the American edition of *Druitt's Surgery*, of 1887, appears the following remarkable statement: "When septic inflammation is to be found, starvation diet may be a very important preventive, as it seems to be in compound injuries of the skull." This relic of ancient surgery, which it surprises me to find in a book published so recently, is, I fear, accepted by not a few operators to this day.

Sucking ice does not allay thirst as quickly as water. A large amount of water may be given if it is administered in comparatively small quantities at a time. Intensely cold water is, of course, objectionable. The administration of water is especially necessary if there has been much bleeding during or before the operation. Patients are often distressed by the enforced absence from water at times insisted upon by the attendant during the first few days after an operation.

Alcoholic stimulants are used by me to a very limited degree in the after-treatment of operations, as I believe they are frequently given in larger quantities and oftener than is at all necessary. The practice of giving all surgical patients milk punch or wine-whey is reprehensible. In large wounds I generally remove the first dressings at the end of twenty-four hours, because of the oozing which usually takes place.

If the wound has been washed or irrigated with antiseptic solutions, the oozing is liable to be abundant and saturates many thicknesses of gauze. The removal of the soiled dressings at this time enables me to apply clean antiseptic gauze, to cut tight sutures, if any be too tight, and to take out a drainage-tube if there is no further use for it. In addition to this, it allows the dressings to be applied more

neatly and satisfactorily than can be done when the patient is recovering from etherization. If the wound is one in which little oozing is expected, no change is made in the dressing at this time; and in all cases no change in the dressings is made after the first twenty-four hours, unless a rise in temperature, discomfort of the patient, or soaking of the discharge to the surface indicates a necessity for so doing.

SACRO-COCCYGEAL DIMPLES, SINUSES, AND CYSTS.

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THIS paper is intended to include the consideration of the origin of the congenital depressions, sinuses, and dermoid cysts found in the median line of the back over the coccyx and lower part of the sacrum, together with the pathological conditions to which they may give rise. It is chiefly from a surgical point of view that these sinuses and cysts have attracted attention, and, as a rule, it is owing to pathological changes occurring in them that the surgeon is consulted. In a typical case the patient, usually a young man, gives a history of irritation followed by one or more abscesses in the region of the lower end of the spine. The surgeon makes an examination, and, on separating the buttocks, finds in the median line over the coccyx a small congenital opening lined with epidermis. There are often one or more fistulous openings on the buttocks. On passing a probe into the congenital opening it penetrates upward to the extent of one or two inches toward the lower posterior portion of the sacrum. On laying the sinus open, it is found to terminate in a small abscess-cavity containing a coil or tuft of hair. The fistulous sinuses terminate in this same cavity. It is the presence of this hair at the bottom of these sinuses that has always excited the interest and curiosity of surgeons, as is evidenced by the titles under which they have published their cases, namely: "Hair Extracted from an Ulcer," "Three Cases of Pilonal Cysts," "Monstrosity by Inclusion," "Pilonidal Sinus," "Abscess of the Sacrum; Hair."

For a full understanding of these congenital openings and abscess-cavities containing hair, it will be necessary to make a detailed study of the cases published, of the results thus far obtained, and of the theories advanced to explain them.

Of the three congenital abnormal formations (considered in this paper) found in the sacro-coccygeal region, viz., depression, sinus, and dermoid cyst, the first, or *depression*, is by far the most frequent. Hodges says: "There is found in many children a conical depression near the tip of

the coccyx." According to Lannelongue, a cicatricial depression can be found in this region once in four or five cases in children. Heurtaux found more or less pronounced traces of an infundibulum in about 4 per cent. of the men and women he examined. Lawson Tait found a well-marked dimple present in 23 per cent. of the women he examined at the Birmingham Hospital for Women.

A sinus is much less frequent. It may vary in length from one to several centimetres, and in diameter from an orifice so small as scarcely to admit a knitting-needle up to an opening large enough to be mistaken for the anus. The depressions and sinuses are always situated in the median line in the fold between the buttocks; the opening into them is usually opposite the tip of the coccyx, but may be over the sacro-coccygeal articulation or the lower end of the sacrum. More rarely it lies between the tip of the coccyx and the anus. As a rule, there exists but one congenital opening into a sinus, but Lannelongue reports several cases in each of which he found three orifices present; Lamadrid reports one with an equal number, and Heurtaux had one case with three and another with four congenital openings into it. A similar case, probably, is that of J. C. Warren's, reported further on (Case XVIII.). The direction of the sinus is usually upward, between the skin and the coccyx, to the lower end of the sacrum, but it may be toward the tip of the coccyx; rarely, it runs up between the rectum and the coccyx (Case IV.). Abnormality of the coccyx has been not infrequently noted in connection with these sinuses. From the deeper of these there is sometimes a secretion containing fat and squamous epithelium. A case reported by Reclus (Case IV.) had a slight mucous secretion containing some débris of pavement epithelium. The lining membrane of these sinuses resembles skin, and hair is occasionally found growing from its surface (Case VIII.).

Dermoid cysts have not infrequently been found over the coccyx and lower part of the sacrum, some containing hair, others not; some were noticed at birth, others made their appearance in adult life (Cases XIV. and XV.).

Various theories have been advanced to explain, in the first place, the inflamed or suppurating sinuses containing hair, and, in the second place, the congenital depressions and sinuses. Of the suppurating sinus J. Mason Warren⁴³ says: "The origin of this singular affection is involved in obscurity. It would seem possible, however, that it may begin in the stout hair or hairs from a single follicle becoming in some way diverted from their normal direction and inverted upon themselves within the follicle itself; the continued growth of the hair would then result in the formation of a tangled knot or ball of hair which might readily give rise, after a time, to irritation, just as a similar accumulation of sebaceous matter in the follicles of the face may excite that form of inflammatory

action known as acne. The occurrence of the disease in the median line between the folds of the nates may, perhaps, be explained by the constant pressure and moisture of the part softening both the newly-formed hair and the epidermic cells surrounding the mouth of the follicle." Vaughan's theory of the origin of these sinuses containing hair is the same. According to Gross, they originate in "a small, congenital pilocystic tumor" arising from a "sebaceous follicle which during development intercepts a small tuft of hair. This tumor, although always congenital, may remain a long time in a dormant state, causing little or no disturbance unless accidentally injured or irritated, when it may inflame and suppurate, causing, if left to itself, an angry, irritable ulcer; the parts around are red and swollen, and sometimes riddled with sinuses."

Although observing the congenital orifice over the coccyx in the cases he treated, J. Mason Warren made no attempt to explain its presence. Later writers have connected this congenital opening with the congenital dimple so often found in this region, and shaped their theories accordingly. Hodges¹⁷ explains the origin of the sinuses containing hair as due to the hairs rubbed off from the body getting into the congenital dimples and causing inflammation and suppuration, especially in those cases where there is an abundant pilous development combined with insufficient attention to cleanliness. The dimple he considers as due to an imperfect union of the lateral halves of the body, involving the integument only.

According to Heurtaux,¹⁸ an accumulation of epidermal and sebaceous products can take place in the congenital infundibula, especially if they are oblique and the orifices narrow. This retention can become the cause in certain cases of suppurative inflammation of the skin which forms the bottom of the sinus; the skin becomes ulcerated and perforated, pus gradually infiltrates the subcutaneous tissue and gives rise to the fistulous tract. When, owing to fleshiness, the narrowness and depth of the fold between the buttocks is increased, the chances of retention and of irritation are still greater. The growth of hair in these infundibula is very favorable to the development of fistulæ. Lamadrid's¹⁹ theory is practically the same as Hodges'. "The patient was a very hairy man, and that accounts, I think, for the hairs getting into these openings, may be one at a time, caused by the breaking of them with the rubbing of his pants and shirt against his back while lying on his back or at the act of sitting—in fact, by anything that came in contact with his body."

In regard to the congenital dimple, Lawson Tait concludes that it is a cicatrix, and suggests that it is the hereditary cicatrix of the spina bifida by which the human tail has been lost.

According to Fere,²⁰ they are due to incomplete closure of the "posterior umbilicus"—in other words, the lower end of the medullary canal.

Terrillon³⁸ thinks them due to a special form of spina bifida, involving not the vertebral arches, but simply the skin. Lannelongue²¹ gives the following explanation of their origin: "After the medullary canal is formed, the mesoblast passes back between the vertebral column and the external epidermis, except in the region of the sacrum, where little of this tissue is interposed, so that this region is reduced to epidermis and bone. Consequently, the superficial layer (epiblast), joined at a later period to the mesoblast, preserves closer relations with the bone, and at one or more points the skin may be bound down to the bone, and later, when the subcutaneous tissue is developed around these places, a depression will be formed. If deep and narrow enough, the orifice may close up, and a dermoid cyst be the consequence."

Inasmuch as we have, occurring in the same site, depressions, sinuses, and dermoid cysts, let us consider for a moment dermoid cysts and the other regions in which they are found. According to Sutton³⁶ dermoid cysts "occur along the lines of coalescence of the opposite halves of the body-wall and of the embryonic clefts." Lücke²³ says: "They are confined to certain fixed regions—median line of head, neighborhood of eye, sides of neck, testicles, and ovaries."

Lannelongue²⁰ states it thus: "Tout kyste dermoïde émané de l'enclavement ou de la persistance de l'ectoderme provenant d'une fissure embryonnaire."

Leaving out of the question dermoids of the ovaries and testicles, dermoid cysts occur most frequently in the region of the branchial clefts. Concerning them Klebs¹⁸ says: "We can demonstrate all possible transitions, from open inversions of the external skin, such as not infrequently occur in the neck in the form of cleft- or sinus-like dermoids, to such as have only a very narrow communication with the skin, and finally, such as are wholly cut off, as was first demonstrated by Heschl. The similarity in other particulars of these two latter forms leads to the assumption that these also arise from inversions of the skin. This conclusion is strengthened by the distribution of dermoids whose origin points to a relation with the embryonic sutures."

Reasoning by analogy, there should exist in the median line of the back, in the sacro-coccygeal region, an embryonic basis to account for the depressions, sinuses, and dermoid cysts that occur there. From Quain²⁸ we obtain the following facts: "In the formation of the medullary canal the epiblast thickens to form the medullary plates, which bending round dorsally, meet in the middle line above the medullary groove and there coalesce, at first in a limited space near the middle, and later both forward and backward, so as to effect the union along the whole dorsal line, *except at the hinder incomplete part*. By this union the medullary plates and groove are converted into the neural or medullary tube, which constitutes the primary form of the brain and

spinal marrow. The spinal portion (of the medullary canal) retains a more uniform, cylindrical shape, excepting toward the caudal extremity, where it is longer in being formed and remains for a time a flat, open, rhomboidal dilatation. The spinal cord has been found by Kölliker already in the form of a cylinder in the cervical region of a human embryo of four weeks. Ununited borders have been seen by Tiedemann in the ninth week toward the lower end of the cord, the perfect closing of the furrow being delayed in that part, which is slightly enlarged and presents a longitudinal median slit analogous to the rhomboidal sinus in birds."

In the adult the medullary canal lies in the centre of the spinal cord, which ends near the lower border of the body of the first lumbar vertebra. "Below here it is continued, somewhat enlarged, in the *filum terminale* for about half its length. Below the termination of the canal the *filum* is mainly composed of connective tissue, and becoming blended with the lower end of the sheath opposite to the first or second sacral vertebra, perforates the *dura mater*, and, receiving an investment from it, passes on to be attached with this to the periosteum of the lower end of the sacral canal, or to the back of the coccyx." The medullary canal, then, in its early history is a tube lined with epithelium and open at both ends. The upper of these ends closes early; the lower has been seen open as late as the ninth week. If it did not close there would exist an opening in the median line of the back over the lower part of the sacrum or over the coccyx. It could not be higher than this, for the vertebral canal extends down as low as the third or fourth sacral vertebra. Below this (in the sacrum) "is a triangular opening, the termination of the spinal canal, the lateral margins of which are formed by the imperfect *laminæ* of the fourth and fifth sacral vertebrae." This would evidently be, then, the point of exit of the medullary canal from the spinal or vertebral canal.

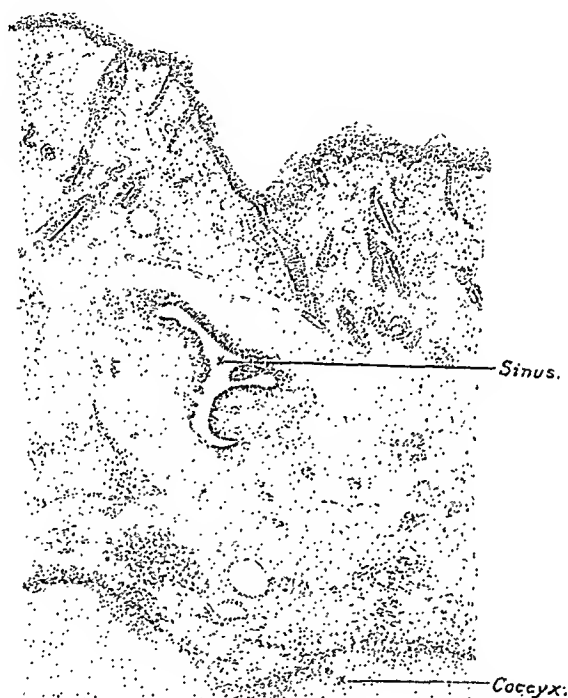
To see what light embryology might throw on this subject, a number of microtome sections were made through the sacrum and coccyx, with adjacent tissues, of several fetuses kindly put at my disposal by Drs. W. F. Whitney and C. S. Minot. The following results were obtained:

FÆTUS I.—About six months. There is a distinct canal lined with one or more layers of columnar and cuboidal epithelial cells, lying between the skin and the coccyx just below the hair follicles exactly in the median line. The lower end of it was not obtained; the upper divides into two canals, separated by a group of hair follicles; after extending through several sections, first one and then the other comes to a blind end. There are no signs of glands or hair follicles opening into the canal, which runs through over twenty sections.

FÆTUS II.—About six months. Shows a canal somewhat more flattened than the above, lined with one or two layers of columnar epithelium. It occupies about the same relative position as the canal in Fœtus I.

FÆTUS III.—About four months. There are present here two small cavities lined with epithelial cells, extending through a series of eight sections, as follows: Section 1 shows the epithelium of the surface dipping down in the median line; in Section 2 the epithelial cells are extending in deeper; in Section 3 a large group of epithelial cells is cut off from the surface; in Section 4 appear two cavities lined with epithelial cells; in Section 8 appears the last group of cells.

FIG. 1.



FÆTUS I.

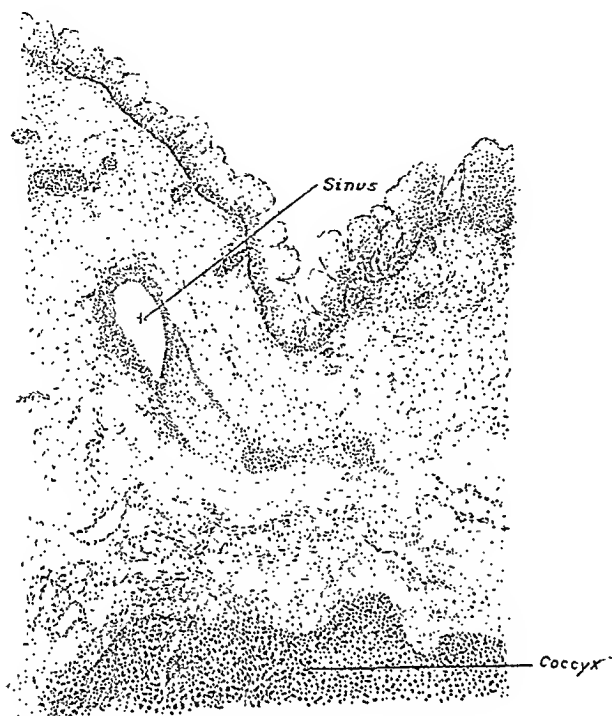
FÆTUS IV.—About three and one-half months. There is in this foetus a canal or cavity of considerable size, lined with one or two layers of columnar epithelium, placed opposite the lower end of the coccyx and having no connection with the surface of the body. Beginning at the lower end there is first a small collection of epithelial cells, extending through three sections. Then another collection of epithelial cells begins a little to one side of the median line near the surface; after extending through two sections, traces of a canal are evident; this canal rapidly increases in size; chains of epithelial cells extend downward and inward from it toward the median line; in its upper portion it is double. This cavity runs through twenty-one sections.

FÆTUS V.—About three months. Shows a perfectly distinct cavity shut off from the surface and extending down to the coccyx; it is lined with one or two layers of columnar epithelium, and extends through six sections.

FÆTUS VI.—About four months. Sections show irregular collections

of epithelial cells near the coccyx, a little to one side of the median line; in some sections the epithelial cells are arranged concentrically so as to form tubes of small calibre; in a few sections three or more tubes are present.

FIG. 2



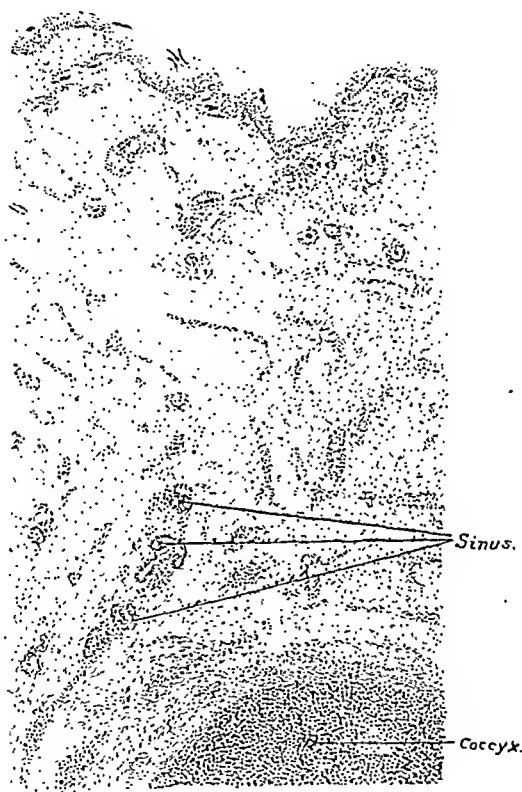
FÆTUS II.

FÆTUS VII.—About three and one-half months. No traces of a canal could be found. The medullary canal in the filum terminale shows well, extending to the lower end of the sacrum. In one part the canal is double.

These cases show that in fœtuses of three to six months there is very frequently present over the coccyx a canal lined with epithelium—in some cases connected with the skin, in others not; in some situated near the skin, in others near the coccyx. The question naturally arises as to their origin. They may be due either to an extension inward of the epidermis or to the remains of some canal. If due to an extension inward, or, as Lannelongue assumes, to the skin being bound down to the coccyx, why do they not contain the glands and hair follicles with which the epidermis in that region is studded? As regards an extension inward of the skin, why should it occur here so often and nowhere else? It seems much more likely that they are due to incomplete obliteration of a former canal, and extending, as they all do, upward and posteriorly to the coccyx, the medullary canal seems the most likely origin.

The branchial clefts are closed by the eighth week. As before stated, the medullary canal has been seen open as late as the ninth week. Consequently, the obliteration of the clefts in the one case, and of the medullary canal in the other, must take place at about the same period of intra-uterine life, with this difference—that growth is more rapid and perfect in the upper part of the body, and hence more favorable to closure of the clefts. If, notwithstanding this, sinuses and cysts occur in the neck and about the ears, there is at least an equal chance that they may occur at the lower end of the medullary canal.

FIG. 3



FÆTUS III.

It would seem from a study of the sections from these fetuses that obliteration of the medullary canal takes place at first, and most completely, at the lower end of the sacrum, and extends from this point in both directions. As is well known, the spinal cord at first extends the whole length of the vertebral canal; but, as the latter grows the more rapidly in length, the cord rises and the filum terminale is stretched, thus favoring obliteration of the medullary canal at the lower part.

The obliteration of the medullary canal between the end of the vertebral canal and the skin apparently frequently takes place in an irregular manner; but, for that matter, the medullary canal in the spinal cord shows frequent irregularities, sometimes existing as a distinct canal, sometimes double, as in Fœtus VII., and often showing in sections only as a very irregular clump of cells.

FIG. 4.



Fœtus IV.

Undoubtedly the majority of these remnants of the medullary canal become obliterated—only the larger, especially those in which glands and hairs are present, persisting as the depressions, sinuses, and cysts of extra-uterine life; and in all probability it is only the congenital sinuses and cysts which give rise to the suppurating sinuses.

Microscopical examination of sections of a suppurating sinus which has been dissected out gives little satisfaction. The walls have been destroyed by the inflammatory process, and beyond granulation tissue in which hairs are often imbedded, nothing is found. A sinus (Case

XVIII.) removed by Dr. J. C. Warren at a secondary operation, however, is very interesting. It shows a canal large enough to admit a knitting-needle, about half an inch long, both ends of which open in the median line. The central portion lies some little distance below the surface. It is lined with a pavement epithelium corresponding exactly with that of the surface of the body, but contains no glands or hair follicles. The case was probably one where there existed primarily a sinus with two or three openings, and at the first operation the upper one only was removed.

Next to the origin of these sinuses, the most important question is the cause of *their inflammation* and the source of the hairs so often found in them. Partaking, as these sinuses do, of the properties of the external skin, they also shed their cornified epithelium, and, in case they possess glands and hair follicles, the products of their secretion. So long as these products can escape, no harm is done; but if the orifice of a sinus is small, or an injury causes swelling of the tissue and closure of the orifice, the retained secretions cause irritation, and after a greater or less time suppuration follows. The pressure within the suppurating sinus may be sufficient to force out the contents occasionally; in other cases artificial exits are produced, giving rise to fistulæ on the buttocks. The most frequent cause of stopping up the orifice and of preventing the escape of the secretions is hair. Situated, as these sinuses are, between the buttocks, cast-off hairs, fibres from clothing, etc., naturally gravitating in that direction, may get into them, especially if the orifice is large. But in at least a portion of the cases the hair undoubtedly originates within the sinus. Dermoid cysts in this region frequently contain hair (Cases XIV. and XV.). Why should not the sinuses having the same origin and differing only in the fact that they are not completely closed in, produce hair from their walls also? There is no reason, however, why hair from the outside should not occasionally get into a sinus in which hair is growing and thus give a mixture, as in a case reported by Hodges; or, the hair in this case might all have come from different parts of the body. Frequently, however, the hairs in a sinus are all of one kind, suggesting a common source, such as would hardly be the case if they entered from outside. It must be noted, too, that the hair from a sinus is often of a different color from that of the rest of the body (Cases VII. and VIII.).

If, as Hodges says, hairs have such a faculty for insinuating themselves into an opening or into the skin, why are they not found in blind external fistulæ situated in almost the same place? The discharge is hardly sufficient to keep them out. Moreover, these suppurating sinuses probably do not originate in the dimples, as Hodges says, unless they are of considerable depth, but, as stated above, from the congenital sinuses and dermoid cysts. If a dermoid cyst be the origin, there will

be, of course, no congenital opening into it. If, on the other hand, a congenital opening is found in the median line over the coccyx in connection with a suppurating sinus, it points positively to a congenital sinus as the origin of the latter, even if no hair is found within it. The hair may have escaped from the opening along with the pus from the cavity, or there may never have been any there. Such is probably the state of affairs in Case XIX.

The fistulous openings, the result of abscess formation, lie almost invariably to one side or other of the median line. The suppuration may also cause softening of the surface of the coccyx or sacrum (suggesting tuberculosis as the cause of the sinus), just as a wen or cyst on the scalp may erode the skull or even penetrate through into the brain.

Hair is most likely to be absent in those cases where there is a history of injury; the injury, instead of the hair, furnishing the irritation. Case XVII. (Warren) and some of Goodsall's cases (XVI.) are probably examples of this. They may have originated from open or closed remains of the medullary canal.

After I had finished my work on this subject, I received from the Library at Washington, an article entitled: "*Les vestiges du segment caudal de la moelle épinière, et leur rôle dans la formation de certaines tumeurs sacro-coccygiennes.*" Note de MM. G. Herrmann et F. Tourneux, présentée par M. Sappey.

They made sections through the sacro-coccygeal region of fetuses with the result of finding over the coccyx "des tubes" which they describe as "conduits flexueux assez irrégulièrement conformés. La paroi de ces tubes, épaisse d'un vingtième de millimètre en moyenne, est constituée par un épithélium stratifié affectant tantôt le type prismatique, tantôt le type pavimenteux; suivant les points considérés, l'évolution histologique de vestiges se rapproche donc de celle du tube médullaire ou de celle de l'épiderme. Sur les foetus plus âgés, les vestiges s'atrophient peu à peu à la naissance, leur plus grand diamètre ne dépasse guère d'un millimètre. Le phénomène désigné sous le nom d'ascension de l'extrémité de la moelle est donc dû non seulement à un allongement plus rapide du rachis, mais aussi et surtout à la disparition par atrophie de la portion caudale (coccygienne) du névraxe. Ce fait avait déjà été signalé par Braun chez le mouton. (His u. Braune's *Archiv*, 1882)."

Appended is a limited number of cases illustrating the main points in the paper.

As regards the surgery of these suppurating sinuses little need be said. They should be laid open, the hair sought for and removed if present, and the sinus either dissected out or thoroughly curetted so as to remove all the cutaneous surface.

CASE I. (*Dunlap*).—Girl, aged eight years. A circular pit or hole in median line over coccyx, extending downward and forward to the tip of coccyx; one-quarter of an inch in diameter, and one-quarter of an inch in depth. Tip of coccyx turned backward and situated one-quarter of an inch below lower border of hole.

CASE II. (*Heurtaux*).—Medical student, nineteen years. For six months had noticed some sensation in region of coccyx; a slight purulent discharge. Examination showed four congenital infundibula present, all four connected with one fistulous tract.

CASE III. (*Heurtaux*).—Woman, twenty-three years. Abscess in sacral region at age of seventeen; had continued discharging ever since. Examination showed three congenital infundibula, all opening into the fistulous tract.

CASE IV. (*Reclus*).—Boy, sixteen years. Brought for surgical advice for fistula which gave no trouble. Found a congenital fistula in median line between anus and tip of coccyx; orifice four to five millimetres in diameter. Sound entered two centimetres, styletto penetrated five centimetres. Slight mucous secretion with débris of pavement epithelium. Fistula ascended parallel with rectum, being distant one-half centimetre from it.

CASE V. (*J. M. Warren*).—Man, twenty-five years; very hairy. Small fistulous opening on sacrum just between fold of nates; exudation of moisture for about one year; complained of soreness and inconvenience. Examination showed a small circular opening just large enough easily to admit a probe, looking as if the skin had become inverted at that point. Probe penetrated upward between one and two inches. Sinus contained hair. Had seen eight or ten cases in men; one in a woman.

CASE VI. (*Walker*).—Young man. For two years a slight mucopurulent stain on shirt, and an annoying sensation about an inch and a half behind anus. Found upon examination two or three small depressions behind anus like smallpox pits; finding nothing else, he dismissed the case. Later, patient returned, having noticed some pus which had been discharged from a fistula at seat of one of the pits. Probe passed about two inches into fistula, which was closed at upper limit near coccyx. Laid fistulous tract open; two or three days later pulled out a bundle of light-brown, downy hair.

CASE VII. (*Anderson*).—Man, twenty-one years; fair complexion, light hair. Six months previous received blow in sacral region. Now complains of scrofulous sore in that region. On examination found a fistula opening near the os coccygeus on left side; could not introduce a probe because the opening was so small and crooked. Four inches above and to left of opening was a tender spot; pressure here forced out mucus mixed with pus; made an opening. Three weeks later, while at work at it, drew out a black substance in loop form; proved to be soft, fine, dark-brown hair.

CASE VIII. (*Heurtaux*).—Woman, twenty years. Complained of pain in region of coccyx. Found near tip of coccyx a small circular orifice three millimetres in diameter. On pressing it with end of finger had impression of small round tumor; on looking into orifice could see a small mass of something colored black; with forceps drew out with some effort a small mass of twisted hairs, some of which were evidently

attached to the wall of the sinus. The hairs were light in color although the girl's hair was dark.

CASE IX. (*Terrillon*).—Young country woman. Hole present over coccyx since birth; for several years had been troubled by its inflammation; no other opening; pavement epithelium in discharge.

CASE X. (*Terrillon*).—Man, thirty-five years; very fleshy; examination showed two fistulæ in the median line, one of perfectly normal skin, size of a large sound, two and a half centimetres deep; it was congenital, and his mother had often worried about it. Since age of fifteen there had been sufficient discharge from this orifice to stain his linen slightly. Discharge contained pavement epithelium and leucocytes. Five or six fistulous openings surrounded the congenital orifice. Histological examination showed the sinus to be cutaneous in structure.

CASE XI. (*Heurtaux*).—Girl, eighteen years. Two years ago a small abscess appeared on left buttock; gathered and broke repeatedly. Examination showed four infundibula in the median line, all of normal skin, also the fistulous opening on the left buttock through which the abscess discharged. A probe could be passed between the two lower infundibula. The two upper ones also communicated, and from them arose the abscess. The sinuses were removed entire, and showed no especial attachment to the bones.

CASE XII. (*J. M. Warren*).—Woman, twenty years. Fell on ice one year before; soon after experienced pain in region of coccyx. Examination by sister disclosed a fistulous opening at junction of sacrum and coccyx. This had discharged thin, unhealthy pus, up to time she entered hospital. Then found two fistulous openings in median line, one at junction of sacrum and coccyx, the other about an inch above it. A probe could be passed both upward and downward for a considerable distance. The sinus was laid open, and at the bottom of the abscess was found a coil of hair.

CASE XIII. (*Désprés*).—Girl, thirteen years. Dermoid cyst in coccygeal region; no adhesions to the deeper parts, hence not a spina bifida. "These tumors may form abscesses and give rise to fistulæ."

CASE XIV. (*Lannelongue*).—Boy, four and a half years. A slight projection was noticed in the sacro-coccygeal region shortly after birth; increased to the size of a chestnut; removed; contained a few drops of liquid, the rest consisting of epidermal cells and a few hairs; the wall showed sebaceous glands and hair-follicles.

CASE XV. (*Trzebicky*).—Woman, thirty-five years. A year and a half ago noticed a swelling on left buttock; grew larger than a child's head; it was situated a little to one side of the median line, and consisted of two separate tumors; fluctuation extended into the pelvis. Operation: pus-like contents; many fine hairs; horny epithelium. The two cysts did not communicate.

CASE XVI. (*Goodsall*).—Female, thirty-five years. Four years before fell and struck near the sacro-coccygeal articulation. The part remained always tender. Five months after the fall an abscess formed, and two months later began to discharge. Examination showed several sinuses. Laid open.

CASE XVII. (*J. M. Warren*).—Girl, nineteen years. Three years before, while sliding on the ice, she fell and received a severe blow on lower part of spinal column. Pain and tenderness for several days; afterward was unable to bear the least pressure on the part, while there

was a constant sense of uneasiness in it. About a year before a swelling commenced there; became the size of a walnut; punctured by her physician, and a curdy matter discharged. After that a serous fluid continued to flow. Cyst laid open. The interior of the cavity presented that white, silvery, epithelial aspect observed in the sacs of some encysted tumors.

CASE XVIII. (*J. C. Warren*).—Woman, twenty-three years. Had a small abscess appear in the median line just over sacro-lumbar articulation when fifteen years old. Small spontaneous opening, which had existed ever since. Occasionally closes, forms a new abscess, and breaks again. Two years ago was operated by Dr. Barrett, of Concord. Sinus laid open; healed, but broke again in three or four months. More or less discharge ever since.

Examination: Has a sinus size of knitting-needle in median line over base of sacrum at beginning of fold between buttocks. Probe enters two inches; no bone felt.

Operation, Dr. Warren: Incision upward and outward on either side of median line. Cavity was filled with pyogenic membrane, which was thoroughly curetted out. In the midst of this membrane was a clump of long hairs.

Re-admitted February, 1890. Two weeks ago had an abscess in fold of buttock, which broke and discharged about one drachm of pus.

Examination: Two small sinuses in fold of nates about half an inch apart, and two inches from anus. Probe admitted with difficulty a short distance. Removed entire.

CASE XIX. (*Beach*).—(I was present at the operation in this case through the courtesy of Dr. Beach). Girl, seventeen years. Perfectly well up to present trouble. About six weeks ago an abscess formed over coccyx and lower part of sacrum. In three days "broke"; more or less discharge since. Examination showed a perfectly round, clean-cut opening in the skin size of a large probe, half an inch above the tip of the coccyx in the median line. One-fourth of an inch above this opening was a small pit in the skin, in no way connected with the sinus. The sinus extended one and one-half to two inches upward, and laterally on the right side about one-half inch, and on the left one inch. Below the opening the sinus was small, admitting a large probe for about one inch. A fine probe penetrated a little further. The sinus formed a perfectly clean cavity with fibrous walls. The coccyx was movable, and the end of it gave a questionable sensation of crumbling. The sinus was laid open, curetted, and packed. The patient was discharged at the end of twelve days with a granulating wound.

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SUPPURATING CONGENITAL CYSTIC KIDNEY, WITH HYDRO-NEPHROSIS AND OBLITERATION OF THE URETER.

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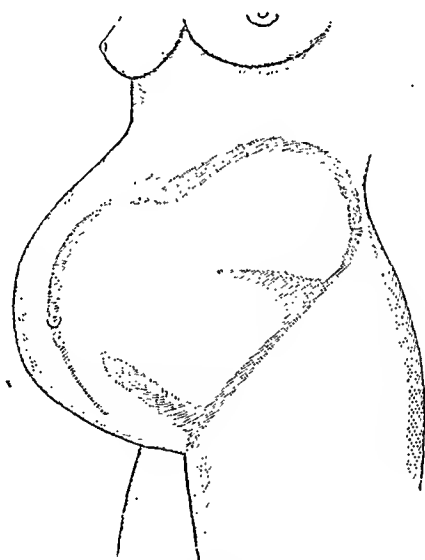
A CAREFUL search through medical literature would seem to warrant the assertion that the following case is unique, for although several cases have been reported in which hydronephrosis has been found associated

with other pathological conditions of the kidney, no parallel to the instance in question could be discovered. Aside from its pathological importance, the case is of especial interest on account of the enormous size of the tumor, extending from roof to floor of the abdominal cavity, as well as its close resemblance to an ovarian cystoma, for which it was at first mistaken.

Finally, the successful operation for the removal of such a monstrous kidney, followed by the rapid convalescence of the patient, to-day enjoying the best of health, complete the interesting picture.

HISTORY.—Outline. Mrs. R. W., a spare little woman, of a markedly cachectic appearance, aged fifty-three years, a native of Seaford, Delaware. Admitted to Dr. H. A. Kelly's service in the Johns Hopkins Hospital, March 25, 1890. Health had been good until seven years ago, when she began to suffer with numerous attacks of fever and chills, diagnosticated as malarial. An abdominal tumor was discovered six years ago, and since then it had gradually increased to its present size.

FIG. 1.



Taken from a photograph. Shows the extreme prominence of the abdomen caused by the renal tumor, closely simulating large ovarian tumor.

Detailed history. Her father died of "heat stroke," and her mother of Bright's disease, one uncle also died from Bright's disease, and one sister died in "coma." At the present time she has a cousin who suffers from a doubtful renal tumor.

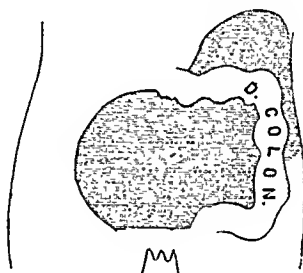
She passed the menopause at the age of forty-nine, the menses having previously been regular and normal. She is V-para, eldest twenty-nine, youngest eleven years. One miscarriage. She has never had any trouble with the bowels, any urinary difficulty, or any previous serious

illness. During her pregnancies she was always troubled with excessive nausea.

Her family physician states that "she had frequent attacks of intermittent chills and fever seven years ago, which were controlled by quinine and mercurials, and about the same time she began to have attacks of pain in the left side, which increased in frequency and severity up to date of operation. During these attacks the most comfortable position was "on the hard floor, with room to roll." Up to the time of admission to the hospital she had acquired the habit of taking large quantities of opium to relieve these pains. About six months previously she had congestive rigors.

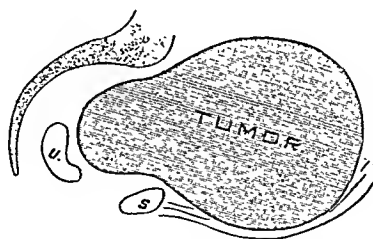
Six years ago she noticed a lump in the right groin, above Poupart's ligament. This was painful at times. It grew gradually until two years ago, when it increased rapidly to its present size within five months; since then it has remained stationary. The following are the notes of the examination on admission to the Hospital:

FIG. 2.



Shows the tumor in black, lying behind the colon and extending from the left hypochondrium to the floor of the pelvis.

FIG. 3.



Shows the tumor in sagittal section. Its relations to the anterior abdominal walls, the promontory, and the small depressed uterus are shown.

Description and mensuration of tumor. The abdomen prominent, vaulted, filled by an irregular bossed mass, about the size of a pregnant uterus at term. Two-thirds of this mass lies to the left of median line. The greatest girth is at umbilicus 104 cm. (40 in.). From ensiform cartilage to symphysis pubis 33 cm. (14 in.). Right spine of ilium to umbilicus 21 cm. (8 in.). Left spine of ilium to umbilicus 26 cm. (10 in.). On the right is a hemispherical fluctuant mass like a monocyst, which is 21 cm. (8 in.) in vertical, and 10 cm. (3½ in.) in transverse measurement. The intestines are plainly felt, and percussed in right flank. To the left the tumor is made up of three large bosses, one just

over median line corresponding to the one on right, one above this, and one filling out the left flank. Small intestines pushed far back, but on percussion there is a *remarkable dull tympany* over the whole area of the tumor, like that of large intestine, and distinctly lower pitched than over small intestines in the right flank. (v, Fig. 2.)

Vaginal examination. Outlet relaxed, uterus far back, pressed down into the sacral hollow. Through the anterior vaginal wall the tense, smooth, spherical wall of the cyst is distinctly felt. This is easily rocked from side to side, being movable to the extent of several centimetres.

Urinary examination. Before operation, March 25, 1890. Urine (by catheter) clear, light orange-yellow color; faint aromatic odor; acid reaction; albumin a trace, showing distinct thin ring with nitric acid; sediment, light white flocculi considerable in amount. Microscopically: A few hyaline casts, also a few epithelial cells and leucocytes.

Operation March 26.

April 3d. Urine (by catheter) clear, light-orange color; sediment mucus, moderate amount; albumin faint trace. Microscopically: A few hyaline casts, some faintly granular.

21st. Urine (by catheter) color lemon; reaction, faintly acid; specific gravity 1021; sediment moderate, light flocculi of whitish mucus; albumin, very faint trace. Microscopically: A few leucocytes, a few hyaline and faintly granular casts; granular débris, and some amorphous urates.

DESCRIPTION OF OPERATION.—Abdominal section by Dr. Kelly, March 26, 1890, at 9.30 A.M. Chloroform narcosis, duration forty-five minutes; pulse before operation 80, after operation 92; duration of operation to the beginning of the closure of the abdominal incision twenty-seven minutes, to completion thirty-five minutes.

First incision in the linea alba 10 cm. ($3\frac{1}{2}$ in.) in length, later extended up through umbilicus to 15 cm. ($5\frac{1}{4}$ in.); abdominal walls thin; at the second cut the peritoneum was laid open, exposing the mottled, reddish-white surface of a large sac, which was punctured and a large ovariotomy trocar thrust in, discharging six litres (about twelve pints) of thin yellow pus. On pulling down the cyst to evert it, it was found to be universally adherent. On attempting to strip off the adhesions around incision the hand was carried up under transverse colon, which was spread out over the anterior surface of the cyst.

The hand then carried into the cyst cavity revealed its enormous extent, reaching from right iliac fossa to floor of the pelvis high up into the left hypochondrium.

A calculus about 15 by 4 mm., dumbbell-shaped, was found in the tumor lying on the pelvic floor, suggesting at once renal origin.

The process of stripping was continued, gradually bringing the tumor forward, and dissecting it out of its bed, by using the fingers with a shearing movement through an opening made in the peritoneum to the inner side of the left descending colon. Strong adhesions everywhere bound the mass to the cellular tissue; these offered more difficulty on account of the enormous size and superficial extent of the tumor than from their density. One adhesion 2 cm. ($\frac{3}{4}$ in.) in breadth, binding the tumor down to the psoas muscle in left flank, was separated, leaving bunches of muscular fibre on the tumor.

Up to this point the time was chiefly occupied in releasing this vast sac from its bed, extending like saddle-bags across the vertebral column.

The chief difficulties in the operation were now encountered in pulling the tumor down from above, high up under the left ribs and the diaphragm. On rolling the tumor over and exposing its posterior surface, a large vein 1 cm. (0.39 in.) in diameter was ligated. Parallel and to the inner side of this lay the ureter, which appeared sound and was not dilated; this was ligated at a point about 8 cm. (3+ in.) from the kidney.

After separating a number of adhesions from around the upper portion of the kidney, the whole mass was finally drawn down attached only by the hilum and its vessels; here a band 4 by 2 cm. ($1\frac{1}{2}$ by $\frac{3}{4}$ in.), including all renal vessels, was tied in five bundles and the kidney completely separated and removed.

At the time of emptying of the cyst, and again at its removal, the pulse became thready. Eight hypodermatics of brandy (each m.xxx.) were given. Immediately upon removal of cyst 1.5 litres (3 pints) of hot water, 46° C. (115° F.), were poured into the abdominal cavity; its stimulant effect was at once apparent in the marked improvement in the heart's action, respiration, and general appearance. This was at once sponged out and more hot water poured in and sponged out from pelvis, right groin, over and under liver, around spleen, stomach, and small intestines, leaving the abdomen dry.

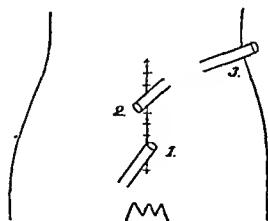
In the left iliac fossa the cellular tissues overlying the peritoneum had so fallen together as to practically separate the vast exposed surface from the peritoneal cavity.

On account of the shock and depression ether was substituted during the operation for chloroform, the latter being resumed at a later stage on account of the quieter narcosis.

The opposite kidney was examined and found to be somewhat enlarged (functional hypertrophy?), but apparently sound.

Drainage. With two fingers within acting as a guide, a scalpel was thrust through the skin, subcutaneous tissue, and muscles of the left flank posteriorly, half way between the crest of ilium and small ribs; through this hole a large glass drainage-tube was passed into the bed of the kidney, thus draining the cellular tissue beneath the peritoneum. (Fig. 4, No. 3.)

FIG. 4.



Shows the position [and direction of the three drainage-tubes used. 1, Draining the pelvis; 2 and 3, draining the left flank.

The abdominal incision was closed with deep and superficial silk sutures, after insertion of two glass drainage-tubes in the median line, one at the lower angle of incision, extending into the pelvis, the other just below the umbilicus, extending over into the left flank. (Fig. 4, Nos. 1 and 2.) Dressings and abdominal bandage were applied, and the patient immediately put to bed and stimulated by hypodermatics of brandy and strychnine and external heat.

Convalescence. The patient was restless the afternoon and evening of the day of the operation, and had considerable pain the same night, requiring a single dose of morphia (one-quarter grain) hypodermatically.

The daily notes were as follows:

March 27. 12 M. Abdomen dressed; capillary gauze plugs in all three tubes saturated with dark, bloody discharge; there has been free discharge from drainage-tube in left flank; an area of cotton over tube size of hand stained by bloody discharge. There has been a very small amount of discharge from the other tubes in the line of the wound. Abdomen flat and flaccid; no nausea or vomiting; general condition excellent.

28th. 12 M. Abdomen dressed; all drainage-tubes removed; plugs in tubes stained with bloody discharge; very slight amount of bloody fluid swabbed from tube in left flank and lower one in abdominal cavity. Abdomen scaphoid; voided urine naturally last evening.

30th. Complains of "pain in bowels" this morning; has had five stools, large and small, during the past twenty-four hours.

31st. Doing well.

April 2. Color of skin of body losing its bronzed hue.

4th. Abdomen dressed; all sutures removed; union perfect, primary throughout, without any suppuration whatever; wound in flank made for drainage-tube healed also primarily. Abdomen flat, walls flaccid, wrinkled.

The patient had from this time on a rapid convalescence, uninterrupted by any bad symptoms.

She was nourished during the two days following operation mainly by nutritive enemata, with small quantities of coffee, and stimulated by hypodermatics of brandy, *p. r. n.*

On the second day small quantities of milk were given at frequent intervals, and on the fourth day she was given soft diet (toast, corn-starch, etc.).

The temperature was 37.7° C. (100° F.) on the day after operation; from that time until the seventh day it ranged between 36.7° C. (98° F.) and 37.5° C. (99.5° F.); after which it remained normal, the pulse being correspondingly low. The patient sat up out of bed for the first time three weeks after operation, and was discharged from the hospital April 26, 1890, feeling perfectly well. She returned to her home in southern Delaware, whence she writes under date of February, 1891, that she 'feels splendidly; in fact, never felt better in her life.'

PATHOLOGICAL EXAMINATION.—The tumor was examined in the pathological laboratory of the Johns Hopkins Hospital, and the following report made:

Abstract of report. It was only after repeated examinations that the tumor could be positively identified as a renal cyst. It was found to be made up of numerous sacs or cysts; the largest of these was twenty centimetres in diameter; this opened into a small sac with which most of the other sacs communicated. The collection of small cysts determined the congenital cystic nature of the kidney; the small sac with which they communicated was thought to have been originally the pelvis of the same, and the largest cyst the hydronephrosis consequent upon the obliteration of the ureter. The examination in detail was as follows:

The shrunken specimen presented for examination is a large sacculated

mass, somewhat the shape of an enormous kidney. Its longest measurement is 44 cm. ; width, 18 cm. ; thickness, 7 cm.

FIG. 5.



Photograph of tumor lying upon a cloth, showing interior of large cyst.

The surface of the mass is covered with adhesions of fibrous and adipose tissue, but is in general smooth and glistening. It is composed of cysts of various sizes, several of which project from the surface. At a point on the concave surface which might correspond to the pelvis of the kidney, there is considerable adipose tissue, and a large artery which measures 2 cm. on the inner circumference enters here together with a large vein. Below the entrance of the artery and vein is another vessel corresponding to the ureter ; 5 cm. of this remains attached to the tumor. This vessel is rather small ; it measures 9 mm. in circumference and its lumen is patent. A mass of striated muscle of coarse fibre, measuring 2 cm. in thickness and 4 cm. in length, is attached to the upper and posterior part of the tumor. No communication between the ureter and the interior of the cysts can be made out.

At the time of the operation the largest cyst was opened and about a gallon of opaque, yellowish-white puriform fluid of creamy consistence escaped ; also, a hard, angular mass, irregular in outline, $1\frac{1}{2}$ cm. long and $1\frac{3}{4}$ cm. broad. The remaining cysts whose contents had not been evacuated by opening the large cyst were subsequently incised. These contained fluid of varying character. In one sac, about the size of a small orange, the fluid was clear ; in another it had a reddish-brown color ; and in the remainder it resembled the fluid of the large sac. The sacs composing the tumor vary in size ; the longest, which composes about one-half of the tumor, measures 20 cm. in diameter, and communicates by a rounded opening, 1 cm. in diameter, with a small sac, with which most of the other sacs likewise communicate. The thickness of the wall of the largest cyst averages $\frac{3}{4}$ mm.

Ridge-like projections of the wall protrude into the interior of the cyst for a distance of $\frac{1}{3}$ cm. In the ridges can be seen a little grayish-red tissue, resembling renal tissue, and in the thicker parts of the wall,

elsewhere, a little of the same kind of tissue can be seen; but, in general, the cyst wall seems to be composed of dense-gray, laminated fibrous tissues. The inner surface of the cyst is in part grayish, glistening, and smooth; but the greater portion of it is opaque, somewhat roughened, yellowish and reddish in color, and has small bloodvessels ramifying over it. The remaining cysts have in general a smooth, grayish, glistening inner surface, but in some places they likewise present a rough, opaque, yellowish deposit, somewhat resembling atheroma.

These remaining cysts likewise have projecting ridges from their walls, in which a little of the supposed renal tissue can be made out, but in general the walls are simply fibrous. They vary in thickness from $\frac{2}{3}$ mm. Most of them communicate by openings averaging 5 mm. in diameter with the large cyst or with the small sac above mentioned, into which the large cyst opens. Two of these cysts are completely closed, although they present cicatrix-like depressions, corresponding doubtless to the former openings, and in one instance a very fine probe can be passed through a minute opening in the cicatrix into an adjoining cyst. The largest cysts contain a few small, irregular, hard masses, $\frac{2}{3}$ mm. in diameter.

No communication between the supposed ureter and the cyst in the concave side, into which most of the cysts opened, could be found. Microscopical examination of fresh frozen sections of wall of largest cyst showed no definite kidney structure. Frozen sections of supposed ureter are confirmative. Scrapings from cyst wall, examined fresh, show leucocytes and compound granular bodies. No definite epithelial cells made out.

One litre of contents of tumor received into sterilized flask directly from trocar presents a yellowish-white, pus-like appearance, of creamy consistence. Sp. gr. 1.030. Reaction, very faintly alkaline. Markedly albuminous, coagulating on heating in test-tube. On standing twenty-four hours, the uppermost portion somewhat less dense in appearance, though there is no distinct sediment.

On microscopical examination it contains numerous compound granular bodies, multinuclear pus-cells, generally fatty degenerated cholesterolin plates, and here and there highly refractive non-nucleated disks, resembling the "Drysdale" ovarian cell; also, fine acicular fatty crystals, singly and in groups.

Cover-slip preparations with aniline stains show no bacteria, though the granular matter appears in some instances to resemble micrococci. Four Esmarch's tubes (agar-agar) stab and smear inoculations made from cyst contents, placed in thermostat, developed no growths.

On further examination of hardened specimens, the yellowish material adjacent to the second largest cyst is almost certainly the greatly altered supra-renal capsule; it consists of epithelial cells which are large and finely granular, some of them containing large drops of fat. They are more or less arranged in masses, which are oblong, the longest diameter pointing to the centre of the mass, separated from one another by a connective tissue rich in cells. Among these epithelial cells there are large pale cells, with a horseshoe nucleus filled with granules, evidently compound granular cells. Adjoining and in the line of the section is a mass of dense connective tissue with a few cells containing numerous vessels. About these vessels is a certain amount of cell infiltration. Adjoining this is a mass similar to that first described, in which

the bloodvessels are very abundant. This consists of epithelial cells, some of them of the ordinary shape and appearance of cells of the supra-renal capsule; others very large, pale, and granular. These cells lie in spaces smaller than those in the first-described mass; most of them very pale and granular. In the tissue there is a great deal of hemorrhage, which gives the microscopic appearance of pigmentation. Next comes a mass of dense connective tissue with few cells, containing glandular tissue and ducts lined with low columnar epithelium.

In the lumen of these a mass of more or less hyaline and granular material stained faintly with eosin. On the exterior of the section is a small portion of what is evidently the cyst wall. This is lined with a layer of vascular tufts, with nowhere complete lining of epithelium. The edge of it is composed of rather loose granulation tissue, with large, swollen cells. Here and there on the surface of this a few epithelial cells can be seen.

The second section shows about the same relations. On one end the cyst wall covered with papillæ; back of these a granulation tissue containing but few cells; and still back of this a dense connective tissue containing few cells and enclosing glandular tubules, which frequently contain colloid material; the tubules sometimes rather indefinite in shape and representing rather masses of epithelium surrounded by connective tissue. Past this, again, comes the loose connective tissue containing epithelial cells, which were considered to be the remains of the supra-renal capsules. There is a marked endarteritis everywhere, some of the arteries being entirely closed. The only evidence of kidney structure is found in the upper portion of the cyst wall, probably corresponding to the areas of kidney cortex. In the walls of the cysts themselves no definite layer of epithelium can be made out, though here and there, between the papillary projections, a few epithelial cells are seen. The connective tissue is general throughout the mass; it is dense and cicatricial, with but few cells. Here and there are areas of intense infiltration with round cells. In several places in the cyst are points which appear brownish to the naked eye; on microscopical examination of this part these are large round openings in the midst of a dense tissue, which contains few or no cells; these openings are lined with a highly refractive brown material, which forms a distinct layer around the openings, and evidently is of a crystalline character. The surface toward the lumen is broken and irregular; it is filled with lines radiating toward the centre, and is darker and more solid at the periphery. Within these masses, completely filling up the lumen, are masses of cicatricial tissue, which come from the surrounding tissue, penetrating between the crystalline masses. These structures are evidently to be regarded as arising from altered renal epithelium. They resemble most in color masses of uric acid, and have the same radiating lines which masses of these sometimes show.

The tumor might be regarded as simply a hydronephrosis, but another explanation, more probable than hydronephrosis, is to regard the whole as originally a congenital cystic kidney. In this case the small cyst into which the ureter and most of the larger cysts opened should be regarded as the pelvis of the kidney. The larger cysts of which the whole tumor is composed were either the original cysts of the kidney,

or they have arisen from the continual dilatation of the cysts with rupture into one another. This would explain the various ridge-like projections on the wall. There might be a hydronephrosis in connection with this.

The supra-renal capsule has evidently been incorporated into the wall of the larger cyst in the upper portion of the kidney. Nearly all of the renal tissue was destroyed in the process, only here and there small remains of tubules can be found, which in most cases have undergone the peculiar transformation of their epithelium into the masses referred to.

FAT-DIGESTION.

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DURING the spring and summer of 1890, in the Berlin Physiological Laboratory, I made a study of the fat-splitting properties of pancreatic juice. I read a paper on this subject before the physiological section of the tenth International Medical Congress, and published a detailed account of my work in the *Journal of Physiology*. (a)¹

It is my purpose in the present paper to show what application my published experiments (a) may have in explaining fat-digestion. That I may do this intelligently, it will be necessary to review our present knowledge of this subject.

C. Bernard believed that pancreatic juice had a twofold action on fats. In the first place, he said that when neutral oil and pancreatic juice were shaken together an instantaneous emulsion resulted, and in the second place, that the prolonged action of pancreatic juice on neutral oil would develop fatty acid. He did not in any way associate these two processes, and believed them to be due to entirely different properties of the juice; the emulsion being an instantaneous process and the fat-splitting occurring only after considerable time. And these two processes are described as separate and distinct properties of pancreatic juice in some of our most recent text-books. But some of the more recent German books have, upon the observations of Brücke and Gad, taught the relationship of these processes. From the fact that the addition of fatty acid to neutral oil makes the mixture readily emulsible in an alkaline liquid, they infer that the emulsion of fats in pancreatic juice, as observed by Bernard, is not due to an emulsion ferment, but is

¹ Cambridge, Eng., April, 1891. The mark (a), which occurs frequently in the text, always refers to my published experiments in the *Journal of Physiology*.

rather due to the development of fatty acid in the fat by the action of the pancreatic juice. They believe, therefore, that the first and only specific action of pancreatic juice on fats is the splitting of them into fatty acid and glycerin, and that by reason of this an emulsion results in the alkaline pancreatic juice; but this opinion is a matter of inference from the work of Brücke and Gad rather than from actual experiment with the juice itself. The special emulsion ferment of Bernard, although not disproven, is not believed in by many German physiologists. But physiologists very generally believe that the alkalinity of pancreatic juice promotes the emulsification of the rancid fats, and this latter opinion I have in my published experiments (*a*) shown to be erroneous. We may, therefore, sum up our present knowledge of the action of pancreatic juice on fats in very few words, viz.: it splits neutral fats into fatty acid and glycerin. We know nothing about the rapidity nor the influence of other agencies on this action.

Let us now note our present knowledge of the action of bile in fat-digestion. The part that bile plays in intestinal digestion seems one of the most obscure of physiological problems.

We know that it has a very decided influence in fat-digestion: this is proven by a large amount of clinical and experimental testimony. The records of clinical medicine teem with cases showing that in occlusion of the bile-ducts the fats are imperfectly digested, and experimental physiology, by ligating the bile-ducts in animals, has amply confirmed this observation. A. Dastre¹ found that when the bile-duct of the dog was ligated and the bile turned into the intestinal canal, midway between the stomach and cæcum, by making a fistula between gall-bladder and intestine at this point, the chyle vessels remained transparent throughout that part of the intestine between the stomach and the entrance of the bile, and only became milky 15 cm. below the point where the bile was turned in.

All of this testimony only gives us the indefinite knowledge that bile has some important influence in fat-digestion, but does not give us the slightest clue to the manner in which it exerts its wonderful influence.

We do not know whether it assists in splitting the fats, or in emulsifying them, or in promoting their absorption, or whether it acts in some other mysterious manner; and the contradictory statements of Wistinghausen¹ and Gröper,² concerning the question whether or not bile promotes the passage of fats through animal membranes, have left us entirely at sea on this important point. In fact, our only definite knowledge concerning the action of bile in intestinal digestion is that it prevents putrefaction, but what influence this anti-putrefactive action of bile may

¹ Arch. of Phys. and Pathol., Paris, 1890.

² Arch. für Anat. und Phys., 1873.

³ Ibid., 1879.

have on fat-digestion we do not know. We may, therefore, say that we are entirely ignorant of the manner in which bile acts in promoting the intestinal digestion of fats.

One fact is quite well established in the physiology of fat-digestion, viz., that splitting of fats is an important, if not necessary, preliminary step in fat-digestion. But while physiologists agree that the splitting of fats is an important factor in their digestion, there is a great difference of opinion as to the extent of the splitting required—some believing that only sufficient acid is developed in the fat to make it emulsible in an alkaline liquid, and others that all the fat must be split into fatty acid and glycerin before it can be absorbed. With this introduction we will now note the conclusions which I have reached by my experiments (a), and then show what application they may have in fat-digestion :

1. Heating neutral fats will develop in them fatty acid, and, therefore, make them emulsible in an alkaline liquid. The cooking of fats will, therefore, by developing in them fatty acid, assist in their digestion.

2. Pancreatic juice has the property of rapidly splitting neutral fat into fatty acid and glycerin. This action is so rapid that it may develop $5\frac{1}{2}$ per cent. of fatty acid in seven minutes, and all the fat may be split into fatty acid and glycerin in less than an hour. These figures are taken from pancreatic juice acting in test-tubes at room temperature.

3. Pancreatic juice splits fats almost twice as rapidly at body (37° C.) as at room (18° C.) temperature. It can, therefore, develop in neutral olive oil $5\frac{1}{2}$ per cent. of fatty acid in four minutes, and split all the oil in half an hour.

4. Pancreatic juice of the rabbit does not contain an emulsion ferment ; it does not even furnish good conditions for giving an emulsion with oil containing fatty acid.

5. The presence of bile or of a $\frac{1}{4}$ per cent. solution of hydrochloric acid, or of both, not only forbids the formation of emulsions, but they also exercise a destructive influence on newly formed emulsions.

6. An equal amount of fresh rabbit's bile will, on being added to rabbit's pancreatic juice, greatly hasten its fat-splitting action in the ratio of $3\frac{1}{5}$ to 1.

7. An equal quantity of a $\frac{1}{4}$ per cent. solution of hydrochloric acid will, on being added to pancreatic juice, retard its fat-splitting action in the ratio of $\frac{2}{3}$ to 1.

8. A mixture of equal quantities of bile and a $\frac{1}{4}$ per cent. hydrochloric acid solution will, on being added in equal quantities to pancreatic juice, greatly hasten its fat-splitting action in the ratio of 4 to 1. The bile not only neutralizes the retarding influence of the hydrochloric acid on the fat-splitting properties of the juice, but it really acts more powerfully .

in hastening the action of the juice when in the presence of this acid than it does when acting alone.

9. If one part of pancreatic juice be diluted with five parts of a $\frac{1}{4}$ per cent. carbonate of sodium solution, its fat-splitting properties will be greatly retarded in the ratio of 1 to 8, and further dilution with soda solution gives greater retardation; this property of the juice being practically destroyed when it is ten times diluted with soda solution.

We may summarize from the above propositions as follows:

a. Pancreatic juice can, acting alone, do a certain piece of work in x minutes, viz., develop in neutral olive oil a certain quantity of fatty acid.

b. Pancreatic juice acting in the presence of five parts of a $\frac{1}{4}$ per cent. solution of sodium carbonate will require eight x minutes to do the same work, and in the presence of ten parts of the same soda solution its action will be almost destroyed.

c. Pancreatic juice acting in the presence of an equal quantity of a $\frac{1}{4}$ per cent. solution of hydrochloric acid will require $\frac{3}{2}x$ minutes to do the same work.

d. Pancreatic juice acting in the presence of an equal quantity of a mixture of bile and a $\frac{1}{4}$ per cent. hydrochloric acid solution will require only $\frac{1}{4}x$ minutes to do the same work.

From the last two propositions we may make another:

e. If bile be added to pancreatic juice which is acting in the presence of HCl, the fat-splitting action of the juice will be hastened as $\frac{3}{2}$ to $\frac{1}{4}$, or as 6 to 1; and reversely, if the bile be cut off from pancreatic juice which has previously been acting in the presence of both bile and hydrochloric acid, the fat-splitting properties of the juice will be retarded as 6 to 1.

APPLICATION OF THESE PRINCIPLES TO FAT-DIGESTION.—During the process of cooking, as we have seen (a), a considerable percentage of fatty acid is developed in fat, so that the fat in the food passes into the stomach not as neutral, but as rancid¹ fat. In the stomach, so far as we know, the rancidity of the fat is not increased, but it is mixed with hydrochloric acid, and, therefore, passes into the duodenum very much increased in acidity. The contents of the stomach, as it passes into the duodenum, contained $\frac{1}{4}$ per cent. of hydrochloric acid. The fat, therefore, enters the duodenum as part of such an acid mixture, and in such a state is subjected to the action of pancreatic juice.

Pancreatic juice has the property of rapidly splitting neutral fat into fatty acid and glycerin; acting alone at room temperature it can develop in neutral olive oil $5\frac{1}{2}$ per cent. of fatty acid in seven minutes, and at body temperature it can develop this amount of acid in four minutes, and split all the oil in about half an hour. This indicates the rapidity

¹ Rancid fat means fat containing fatty acid.

of action of pure pancreatic juice on neutral olive oil, but such are not the conditions found in the duodenum. The fat in the duodenum is not subjected to the action of unadulterated pancreatic juice, but to pancreatic juice mixed with bile. The bile and pancreatic juice are poured through a common opening into the duodenum, and are, therefore, mixed before they come in contact with the fat. Of great physiological importance, therefore, is the conclusion to which I have arrived—that an equal quantity of bile will hasten the fat-splitting action of pancreatic juice as $3\frac{1}{2}$ to 1. The preliminary mixing of bile with pancreatic juice enables the juice to do 3.2 times the work it would otherwise do. It is a fact here worthy of note, that we have in this expediting action of bile on the fat-splitting properties of pancreatic juice at least one of the physiological reasons for the union of the bile and the pancreatic ducts in the carnivora. It may be well here to refer to the fact that bile alone does not split fats (*a*). Its action, therefore, in assisting pancreatic juice is purely indirect, and is, therefore, the more remarkable.

We have in the above an indication of the rapidity of action of a mixture of bile and pancreatic juice on pure neutral olive oil. But such are not the conditions found in the duodenum, where, as we have above stated, the fats are mixed with a $\frac{1}{2}$ per cent. solution of hydrochloric acid. We must, therefore, see what influence a mixture of bile and hydrochloric acid will have on the fat-splitting properties of pancreatic juice, for it is in the presence of such a mixture as this that the juice must act in the normal duodenum. Of great physiological importance, therefore, is the conclusion to which I have arrived by test-tube experiments (*a*), that a mixture of bile and hydrochloric acid hastens the fat-splitting action of pancreatic juice as 4 to 1. If pancreatic juice can, as stated above, develop $5\frac{1}{2}$ per cent. of fatty acid in four minutes, then the same juice can in the presence of bile and hydrochloric acid do the same work in one minute. Again, if pancreatic juice can, acting alone, split all the oil into acid and glycerin in thirty minutes, then in the presence of bile and hydrochloric acid it can do the same work in about eight minutes.

The above figures are taken from test-tube experiments (*a*), and the fat used was neutral olive oil. Now, as I have shown elsewhere (*a*), olive oil is very easy of decomposition. The fat in the food is, therefore, not, on the average, as readily decomposed as olive oil, and there must necessarily be many other sources of error in attempting to imitate the conditions found in the intestinal canal.

The above figures, therefore, are thought to be only relatively and approximately correct, but it is my belief that they are sufficiently accurate to indicate that the agencies acting in the healthy duodenum furnish the very best known conditions for hastening the fat-splitting properties of pancreatic juice, and chief among these agencies are: the body tem-

perature, the presence of bile and hydrochloric acid, and the peristaltic movements of the duodenum, which insure the mixing of its contents.

That fats are split with great rapidity under the very favorable conditions furnished by the duodenum is a physiological fact of great importance, for it is quite evident that if this rate of fat-splitting be continued as the food passes down the small intestine, all the fat would be split into acid and glycerin long before the period required for intestinal digestion. One of two things must therefore occur—either all the fat is split, or some agency exercises a retarding influence on the fat-splitting process as the food passes down through the intestine; but I shall have more to say on this point when we come to study the changes that occur in fat after it leaves the duodenum.

Let us now inquire what influence the conditions furnished by the healthy duodenum would have on the formation of emulsions. I have shown by my experiments (*a*) that pancreatic juice not only does not contain an emulsion ferment, but that it does not even furnish good conditions for giving an emulsion with oil containing fatty acid. The alkali in the juice seems to be in some combination which does not readily allow it to combine with the fatty acid to form a soap, and this we have seen (*a*) is a necessary preliminary step in the formation of a permanent emulsion. But the most important fact bearing on the formation of emulsions in the duodenum is that the agents, bile and hydrochloric acid, the most important in furnishing the favorable conditions for the splitting of fats, are the very agents which forbid the formation of an emulsion. An emulsion not only cannot form in the presence of bile and hydrochloric acid, but these agents actually destroy newly formed emulsions (*a*). It seems, therefore, that the conditions furnished by the normal duodenum are as admirably adapted to prevent emulsion-forming, as they are to promote fat-splitting. We may therefore in a few words sum up the changes occurring in fats in the duodenum, viz.: fats are rapidly split, but not emulsified, in the normal duodenum.

The rancid fat leaves the duodenum, and passes into the jejunum, and on downward through the small intestine; there it comes in contact with the intestinal juice and other agents which have an influence on its digestion.

But, first, let us note certain anatomical conditions which may have an influence in fat-digestion. The horseshoe shape and the comparative immobility of the duodenum will make the rate of passage of food-stuffs through it comparatively slow, and in that way contribute to the fat-splitting by exposing for a longer time the fats to the fat-splitting agencies acting under the most favorable conditions. But as the fats leave the duodenum, they pass at once into the larger, and more freely movable, descending jejunum, and their rate of passage through this por-

tion of the intestine would therefore be much more rapid than through the duodenum, and the influence of the bile and hydrochloric acid on the fat-splitting properties of pancreatic juice would be rapidly lost in dilution with the intestinal contents. These anatomical conditions have much more significance when considered in the light of my observation (a) that five parts of a $\frac{1}{4}$ per cent. carbonate of soda solution will greatly retard the fat-splitting properties of pancreatic juice in the ratio of 1 to 8, and that ten parts practically destroy this property; since we infer from this that intestinal juice which contains this percentage of soda will have the same retarding influence. This retarding influence of the intestinal juice begins as soon as the food leaves the duodenum, and is the more rapidly felt the more rapidly the food is hurried along the jejunum. It would seem, therefore, that the conditions in the small intestine below the duodenum are most unfavorable to fat-splitting, and it is probable that they very greatly retard, if they do not entirely check, the fat-splitting process.

Let us now consider what influence the conditions found in the jejunum and ileum may have on the formation of emulsions, and in considering this question it will be necessary to keep constantly in mind one important fact, viz.: when rancid fat is mixed with a $\frac{1}{4}$ per cent. carbonate of soda solution, a good, permanent emulsion always results (a).

The intestinal mucous membrane of the jejunum and ileum is, during digestion, constantly bathed with intestinal juice, which we have before stated contains about $\frac{1}{4}$ per cent. of carbonate of soda. The rancid fat passing along the intestine must, in being absorbed, come in contact with this $\frac{1}{4}$ per cent. solution of carbonate of soda; this being the case, more or less emulsion would necessarily result, this emulsion occurring just at the mucous surface, and probably just prior to resorption. This seems to me to be an inevitable conclusion from the conditions existing in the small intestine. This explanation does not comprehend the emulsification of all the fats in the small intestine, but only such a part of it as, in the process of resorption, passes through the alkaline coating on the mucous membrane. That the fat in the lumen of the small intestine is often not emulsified, and that the intestinal contents are sometimes acid, argues nothing against the above application of existing facts. I do not wish to express the belief, however, that the emulsification of fats is necessary to their resorption, for this I do not believe. A portion of the fat may pass into the villi in the form of soluble soap. This is, in fact, very probable, since in the conditions above named, soap-formation is the chemical force which produces the emulsion. Where the intestinal contents are very rancid, it is quite probable that soap-formation, independent of any influence it may have in forming emulsions, is an important preliminary step to fat-resorption. All I wish to insist upon is that the conditions found in the intestinal canal clearly indicate that emulsion-

forming is also one of the preliminary steps to fat-resorption, and I may add that to my mind it is the most important step.

Milk is a physiological emulsion that is absorbed when thrown into the rectum, and may be taken and digested by animals in which both bile and pancreatic ducts have been ligated. This is sufficient proof that the emulsion of the fat in milk is an important preliminary step to its resorption, and would lead us to infer that the proper emulsion of the fats in the intestine would in like manner promote their absorption. But it is not the purpose of this paper to enter further into the subject of fat-resorption. Having traced the fats through the various stages of their digestion until they are almost, if not quite, prepared for resorption, we can return to the consideration of certain interesting and practical questions, which were omitted because they had no direct bearing on the question under consideration.

That hydrochloric acid retards the fat-splitting properties of pancreatic juice is a fact of considerable clinical and pathological importance, since this retarding influence would be felt when the bile was shut off from the intestinal canal by occlusion of the bile-ducts from any pathological cause. We have elsewhere (*a*) shown that this retarding influence of hydrochloric acid may be represented by the ratio of $\frac{2}{3}$ to 1, and that the expediting influence of bile in the presence of hydrochloric acid may be represented by the ratio of 4 to 1. If, therefore, the bile be shut off from the intestinal canal, its expediting influence on the fat-splitting properties of pancreatic juice would not only be lost, but the retarding influence of the hydrochloric acid would be felt, and the work done by pancreatic juice before and after the shutting off of the bile would be represented by the ratio of 4 to $\frac{2}{3}$, or 6 to 1. All physiologists agree that a certain amount of fat-splitting is necessary to fat digestion, and we may, I think, take for granted that no unnecessary fat-splitting takes place during normal digestion. About 10 per cent. of fatty acid in oil gives the best spontaneous emulsion at body temperature (*a*), and more or less acid than this does not give a perfect emulsion. We infer from this that about 10 per cent. of fatty acid is developed in intestinal fat preparatory to its emulsion and resorption. But whatever amount of fat-splitting normally occurs, we may be quite certain that natural selection has provided the conditions under which this amount of fat-splitting may take place. For example, the comparative immobility of the duodenum, its horseshoe shape, its diminution in calibre, and its close attachment to the head of the pancreas—all, no doubt, have an influence on the rate of passage of food-stuffs, and this rate, which is chiefly controlled by these and other anatomical conditions, was established to accord with normal digestive functions. By this mechanism the fats are exposed to the action of pancreatic juice just long enough to allow for whatever action that juice may have

in fat-digestion. With these anatomical facts in mind, we are better prepared to appreciate the important part that bile plays in the intestinal digestion of fats. Let us suppose that under normal conditions the fats are exposed in the duodenum to the action of pancreatic juice for x minutes, which time is sufficient for whatever fat-splitting is necessary at this point. Now if the bile is cut off, the rate of passage of the food-stuffs, being controlled by anatomical conditions, would remain the same, and the fats would still be exposed to the action of the juice for only x minutes. But since in the absence of bile the pancreatic juice is able to accomplish only one-sixth of the fat-splitting which it normally does, it would follow that the fats would pass the duodenum with only one-sixth of the splitting that normally occurs; and since the splitting of fats is a necessary preliminary step in their digestion, it would follow that the fats would pass in great part undigested. This gives to bile a most important and definite position among the juices which assist in fat-digestion, since we have here pointed out one of the ways in which it exerts its well-known influence. We have now an explanation of the pale, fatty stool that occurs when the bile-ducts are occluded from any cause. The fatty stool will also occur when the pancreatic secretion is shut off from the intestine, but it should contain less fatty acid, and not have the paleness and putridity of the fatty stool due to occlusion of the bile-ducts. We should also have fatty stools when the intestinal juice is absent or deficient because of a failure in fat-resorption, and the characteristic of the fatty stool due to this cause would be the large amount of fatty acid it contained.

NOTES OF A VISIT TO THE LEPER HOSPITAL AT SAN REMO, ITALY.¹

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FROM time to time during my professional life I had heard from various sources of the leper asylum at San Remo. On the occasion of my last visit abroad, while stopping at this town for a few days, I was pleased to avail myself of the opportunity of inspecting the institution. A few brief memoranda were made at the time, which I now present to this Association. San Remo, as everyone knows, is one of the most attractive towns and winter-resorts of the famous Riviera. It is built

¹ Read before the American Dermatological Association, September, 1891.

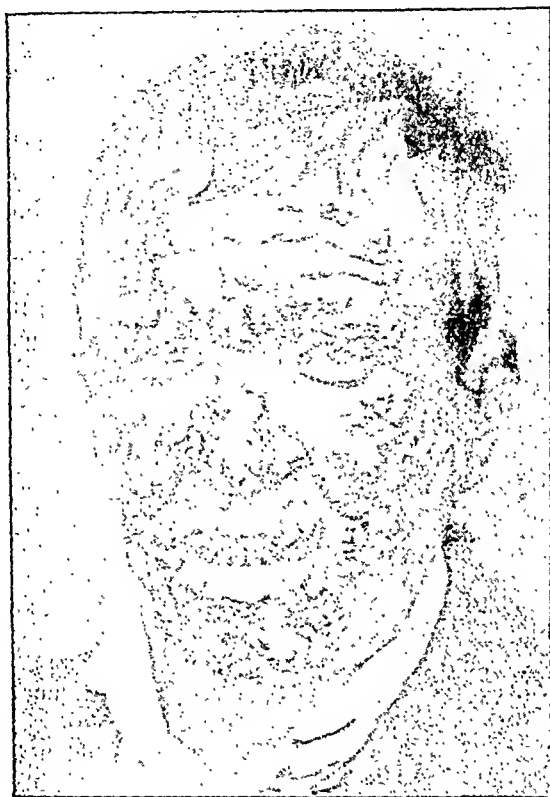
upon a series of steep hills which rise abruptly from the Mediterranean. At the back of the town, upon the summit of a lofty hill, at an elevation of four or five hundred feet above the sea, stands the hospital, which is officially designated "Spedale Civico Mauriziano di San Remo." It is under the care of Dr. Luigi Peracca, medical director, to whose courtesy I am indebted for the information obtained concerning the institution and for the histories of the cases. The building is old, and would hardly be brought forward as a model hospital. It was somewhat of a surprise to find the so-called "leper hospital," as I had always heard the institution spoken of, in reality only a ward in the general hospital set apart for lepers, which apartment adjoined and communicated with the ward for general diseases, the lepers, therefore, not being strictly segregated. There were only few cases of leprosy in the hospital—two men and two women. Upon remarking at the small number of cases, Dr. Peracca stated that but few new cases of late had been admitted, and that latterly some of the older patients had died. The admission of lepers to the hospital is not obtained without difficulty, it being necessary first to procure a permit from the Minister of the Interior at Rome. Such preliminary proceedings being required, doubtless many cases of the disease are permitted to escape and to run at large throughout the kingdom. I had the opportunity of carefully examining the cases referred to, and made at the time the following notes:

CASE I.—Giovanni Elleno, a man, aged twenty-seven, but looks ten or fifteen years older. The disease is of the tubercular variety, and is chiefly developed on the face, as shown in the photograph (Fig. 1). He is a native of Diana Marina, a town a few miles from San Remo, and has been affected with the disease for five years. The whole of the face, including the lips and ears, is extensively invaded. The hands, forearms, elbows, and feet are also involved. Some of the lesions are superficially ulcerated and are covered with blackish crusts, especially on the lips. The first symptoms manifested themselves five years ago, during a four years' sojourn in Marseilles. He is not able to give any history or to suggest any probable or possible cause of contagion. His parents and family have always been healthy. Notwithstanding the ravages of the disease upon the skin, he still remains hearty and strong, and possesses fine muscular development. All treatment has proved unavailing.

CASE II.—Giovanni Borgagno, thirty-three years of age, a native of Perinaldo, near San Remo. One can scarcely believe the man to be so old, for he does not look more than twenty. The disease first appeared seven years ago, and (as in the case of Elleno) began during a five years' sojourn in Marseilles. There is no special history, and the man's parents and family are healthy. The disease is of the mixed variety. He is spare, thin, and ill-nourished, and the skin generally is dry and shrivelled, and in some localities looks ichthyotic. The face is not affected. On the forearm there are several dime and quarter dollar sized, ill-defined, reddish macules, and on both knees irregularly shaped, flattened, tubercular infiltrations. On the ball of the great toe of the right foot

there exists a circumscribed reddish, brownish ulcer, the size of a quarter dollar, with a central deep cavity with some destruction of bone. The fingers are crooked and atrophied, with the skin drawn tightly over them. In the palms are irregularly shaped, ill-defined macules,

FIG. 1.



the skin being harsh and even rough. The face and the rest of the general surface are free. The manifestations, taken together, are more macular than tubercular.

CASE III.—Giovanno Biancheria, aged twenty-two, a native of Castel Vittorio, near San Remo. She, like Elleno, looks much older than is the case, and would be taken for forty-five rather than twenty-two. She has been affected for five years. The disease began while she was residing in Lyons, France. Both eyes are undergoing ulcerative destruction, the tongue is ulcerated, and the lips are crusted. (See Fig. 2.) The hands and feet show the tubercular or nodular variety.

CASE IV.—Letitia Bermondi, aged forty-two, but looks older. She is a native of Montaldo, in Liguria. The disease is of the macular and atrophic variety. The skin everywhere is pale, yellowish, and dry. Her stature is small and the body dwarfish, ill-nourished, and looks mummified. There is almost complete loss of toes and fingers, the result of absorption, without ulceration. The early history is meagre.

FIG. 2.



In looking over these few cases it is striking that three out of four should have first manifested the disease after a prolonged stay in France, and two of them in one city, Marseilles. All of them developed apparently *de novo*, and without known cause. The parents and family in all cases were reported healthy, and there is no account of supposed contagion from contact with other lepers. As to treatment, there is nothing special to be said, beyond mentioning the fact that varied external and internal remedies, such as are known to all, had been employed in vain from time to time.

REVIEWS.

A SYSTEM OF PRACTICAL THERAPEUTICS. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia; assisted by WALTER CHRYSTIE, M.D., late Physician to St. Clement's Hospital, and Instructor in Physical Diagnosis in the University of Pennsylvania. Vol. I. Pp. viii., 1052. Philadelphia: Lea Brothers & Co., 1891.

THE first volume of this *System of Practical Therapeutics* treats of—General Therapeutic Considerations; Prescription-writing; Remedial Measures Other than Drugs; Preventive Medicine; Diathetic Diseases and Diseases of Nutrition. The object of this and the volumes that are to follow is to provide the practitioner of medicine with reliable and helpful information concerning the best and most recent methods of curing disease.

General Therapeutic Considerations, being practically an introduction to the work, were wisely intrusted to the able pen of Professor Horatio C. Wood. Although the exact scope of his contribution might be difficult to determine, yet his eighteen-page paper is a good exposition of therapeutic methods, dosage, and rules for the combination of drugs. He discusses the four possible methods of therapeutics: 1, empiricism; 2, treatment by some law of symptoms; 3, scientific therapeutics; 4, a combination of two or more of these three plans. Scientific therapeutics should always consider the cause and course of the disease, the method of death, the basal conditions which underlie the symptoms, and the remedial forces at hand. As our ignorance, more often in the region of pathology than in that of therapeutics, hampers us, a method which combines science and empiricism is the one that must be used. He treats of the question of dosage and the combining of drugs in a way that appeals to every practical physician who hopes to improve his work by greater scientific accuracy.

Professor Joseph P. Remington occupies eighty pages with a carefully prepared paper on "Prescription-writing and the Combination of Drugs." Although there is considerable material that is elementary, better suited to a text-book for students—and we presume that it is not for them but for physicians that this book is written—yet there is much that is of great value, because it is accurately stated. The *fac-similes* of prescriptions, although previously published, should be a forcible object-lesson to lazy, careless, or ignorant practitioners.

Remedial Measures Other than Drugs are discussed in six papers, covering about four hundred pages. The paper on "Electro-Therapeutics," by the veteran, Dr. A. D. Rockwell, is written in the author's well-known style. He explains fully the subject of current differentia-

tion, dosage, and methods of electrical application. The use of electricity in the treatment of nervous diseases is quite satisfactory, while its use in gynæcology and obstetrics is hardly equal to the work that has been done by several prominent electricians. The subject of "Cataphoresis" is one that is exciting considerable attention, and a full discussion on this point would have been timely. The author deserves much commendation in that he has not allowed himself to be led into making extravagant claims for a valuable agent.

The "Rest-Cure for Neurasthenia and Hysteria" is the subject of a carefully prepared paper by Dr. John K. Mitchell. Although nothing new is presented, yet it gives a clear and concise statement of the way in which this method is to be carried out.

Dr. Benjamin Lee has profusely illustrated his paper upon "Swedish Movements and Massage," basing his work upon that of Ling and his followers. The diseases enumerated are as varied as the explanations advanced for the improvement that has been remarked after the employment of these methods. The paper is encumbered with a somewhat formidable nomenclature.

"General Exercise" is the subject of a well-written article by Dr. Edward Mussey Hartwell, in which its physiology is stated. This article, taken in connection with the last, gives a very comprehensive view of these so closely connected subjects that in the reading we have noticed a repetition of the same statement by the other writer.

The section devoted to "Climate" was wisely intrusted to Mr. S. S. Edwin Solly, who has devoted so much time to this subject. He has made a very readable contribution and one particularly adapted to the use of the American physician. The classification adopted is as good as any, while the practical deductions from his observations—the indications for a change of climate—are warranted by the facts, and contrast very strongly with the extravagant statements so often indulged in by untraveled writers.

Dr. Simon Baruch writes an exhaustive paper upon "Hydrotherapy and Mineral Springs." There is evidence of painstaking research, and in the modern work one finds that the papers of thirty years ago have been levied upon. Considerable of this section has already appeared within the past few years in current literature, the more extensive use of water as a remedial agent having been urged with all the powers of persuasion possessed by the author. Yet we cannot agree with him that hydrotherapy has not, as yet, received due recognition in this country, for during many years there have been numerous institutions in which hydiatic methods have achieved as much success as could be expected, for the hopes of their proprietors have demanded that no theory remain untested in practice and that no appliance should exist without being used. As a commercial venture it has been employed by men of intelligence and education. Water for cleanliness is essential, and the methods that are credited to the author, to raise the standard of cleanliness among the poorer population, are commendable, but these methods are hygienic rather than therapeutic, as the word is usually understood. This part of the paper is open to criticism, because in a system of therapeutics we justly expect a calm, impartial statement, which may be a guide to the practising physician, and not a special plea for measures that have been already in use for many years. As an illustration, we may cite the method of treating typhoid fever which is known under the

name of Brand, and which has been the subject of many discussions, and whose published results have been very justly questioned. For when an essential of success is the commencement of treatment at a time when few physicians feel absolutely certain of the diagnosis, and the fact that it meets but a limited number of indications, extravagant laudation only hastens the time when the reaction comes, and it is likely to be esteemed below its true worth. We feel that American medical practitioners are not so ignorant upon the subject of hydrotherapy as our author would have us believe, and that they appreciate the true value of these measures and use them when fitting occasion presents itself. At these times this paper will be useful, for the technique is fully explained. The subject of mineral springs is one that has not received the attention it deserves, for our springs are numerous and equal in value to those of Europe that are so much lauded. The difficulty seems to consist in finding a physician of wide clinical experience, extensive reading, and judicial mind, who has opportunities for personal observation and who will give to the profession the results of his long and painstaking study. The report in question is brief, leaving an impression in the mind of the reviewer that the writer was far more interested in the use of pure water at home than in the influences of various mineral waters—together with freedom from work, with change of scene and interest, and a regulated diet, at a point where all these resources could be placed under contribution.

Preventive Medicine occupies nearly two hundred pages, and the first paper, by Dr. Henry B. Baker, on "General Sanitation," is excellent in its conciseness and in the incisive logic of undoubted facts. Dr. George E. Sternberg handles the subject of "Disinfection" in a manner that is at once scientific and fully abreast of the times, and this paper on a subject not ordinarily interesting was found to be so full of practical suggestions that it commands attention. Although the author proves his right to speak *ex cathedra* by evidence of personal experimental work that is found on every page, yet he adds a brief but comprehensive bibliography. Dr. J. William White, in "Antisepsis and Asepsis," preaches the gospel of surgical cleanliness, and indeed writes so fully that even the surgeon need not have reference to special works, and so clearly and logically that the average practitioner may thoroughly learn his lesson therein. The section is concluded by an extensive paper by Dr. I. Burney Yeo, on "Nutrition and Foods," including the treatment of "Obesity and Leanness." In this paper we are pleased to note a singular and remarkable absence of evidences of hobbies. The paper is scientific, practical, and not based on only a single idea. The application, in directing special foods in particular diseases, is carefully written, based on accepted theory, and will appeal to the physician as he seeks to obtain for his patient the best possible nourishment for one suffering from that particular disease. The fairness of the author and his extensive reading have made this contribution a valuable one.

In taking up the five papers of Diathetic Diseases and Diseases of Nutrition, "Tuberculosis," by Dr. Solomon Solis-Cohen, is by far the most valuable paper in this volume. It is encyclopædic in character, just in criticism of the work of others, and giving due acknowledgment, intensely practical, and, indeed, an accurate portrayal of the state of our knowledge of the treatment of tuberculosis in the closing days of 1891. Written with a faith in the curability of the lesions of tubercu-

losis, by one whose field of observation has not been bounded by the walls of the dead-house or the laboratory, by one who is entitled to generalize from the results of broad observation of clinical work, this paper represents the best of American practice. Believing that in defective nutrition we have the fundamental factor in the production of tuberculous diseases, he enters into a scientific explanation of the causation of hypotrophy. Prophylaxis in avoidance of infection, food, treatment of sputa, reinforcement of vital energy of the patient in choosing his residence, selecting his clothing, regulating his diet, rest, and exercise, using water and air, all receive due attention. The medicinal treatment of tuberculosis, in these latter days of therapeutic nihilism, thanks to the clinicians who have based their practical work in medicine upon the findings of necropsies, has been considered of little importance; here, however, it receives due consideration. Therapeutic nihilism is fast passing away under the influence of men who, like our author, believe that the chief aim of a physician is to relieve suffering, and that all other departments of medicine are useful only so far as they determine therapeutic indications. We do not find here a simple catalogue of remedies but an intelligent criticism of their value, with frequent practical suggestions for the various conditions that may arise and complications that may occur. The lesions of special structures are taken up, and here, especially, we find a great number and variety of resources at our command. One cannot master this work without feeling that even tuberculosis, formerly considered refractory, now has become amenable to treatment.

Dr. Walter Chrystie presents a short but satisfactory paper on "Scrofulosis and Rhachitis," in which he gives a careful summary of our best and most exact knowledge upon these subjects.

"Acute and Chronic Articular Rheumatism, Rheumatoid Arthritis, and Gout," is the somewhat complex title of a far too brief paper by Dr. James Stewart. While this article is a practical one, the author prefers to confine himself to a few remedies that have stood the test of time and experience rather than to discuss a larger number.

Thanks to improved dietetics, scurvy is now a very rare disease, but the brief paper by Dr. John B. Hamilton is well worthy of a place in this work.

The paper with which this volume closes is by Dr. Frederick A. Packard upon the subject of "Diabetes Mellitus." Although the author does not use, as a basis for determining the indications of treatment, the elaborate classifications in vogue in Europe, yet he gives an excellent view of the well ascertained facts and accepted methods of treatment. The paper is eminently practical; the remedies are selected more on account of the results which come from use rather than from theoretical considerations.

A careful reading of this volume convinces us that it is fully the equal in scholarship of the other systems that have been published during these past few years. It certainly is a valuable work for the practising physician. That it is the most complete presentation of the subject that can be made at the present time is by no means certain. The difference in value of the papers is painfully apparent. Several are diffuse; a few but partially cover their field. A complete bibliography at the end, with references in the body of each paper, would have been acceptable to the accurate physician who wishes to consult original

papers, and a more elaborate index would add to the value of the work. We await the appearance of the remaining volumes with interest, and believe that they will deserve a place in the library of the men who are the bone and sinew of the profession. The volume is a model of the bookmaker's skill.

R. W. W.

A MANUAL OF VENEREAL DISEASES. BEING AN EPITOME OF THE MOST APPROVED TREATMENT. By EVERETT M. CULVER, A.M., M.D., Pathologist and Assistant Surgeon to the Manhattan Hospital, etc., and JAMES R. HAYDEN, M.D., Chief of Venereal Department, Vanderbilt Clinic, etc. 8vo, pp. 294, with 33 illustrations. Philadelphia : Lea Brothers & Co., 1891.

THIS live and timely little volume treats of Gonorrhœa and its Complications, Chancroid, and Syphilis in a most entertaining style not uncommon in the smaller medical books of the day, and which, while at times bordering upon raciness or flippancy, yet is refreshing and does not prevent the conveyance of solid and useful instruction when originating from a competent pen.

Little space is devoted to theoretical considerations. The work is essentially practical, being written in the belief that "as a nation we do not care for the ultimate rootlets of knowledge," but that "we wish to grasp the convergent point where the rays centre; we desire that truth that will do us the most good in the very shortest time." Without entering upon a discussion of this conviction (for fear, perhaps, that we might be compelled to acknowledge its truth), we must credit the authors with having produced a really needed work which should be read by everyone who may treat venereal disorders, and are confident that the more closely its teachings are followed the less will be that dreadful sum of unnecessary suffering which has resulted from maltreatment of venereal diseases. The wholesome conservatism of the book is almost surprising in this age of radicalism and supposed precision, and is doubly valuable and significant as coming from men who have grown up under teachings so diverse from their own.

The sections treating of Gonorrhœa and its Complications, comprising the first one hundred and sixty-six pages, are written by Dr. Culver with pleasing individuality as to both style and handling of his subject. Here are sketched the symptoms, course, termination, complications, treatment, and ethical considerations of gonorrhœa. The gonococcus is practically acknowledged to be the sole cause of gonorrhœa, but we are also told that it is our duty to teach that "there is no reason why a man may not contract a discharge from his honest bedfellow." All abortive and radical treatment of gonorrhœa, also local treatment before the chronic stages are reached, is strongly condemned. Conservatism is the watchword throughout. Treatment down to most minute details is amply set forth.

Stricture of the urethra is defined as "a pathological condition of connective-tissue growth sufficient to interfere with the normal functions of the genito-urinary tract," and the general treatment advocated therefor is very gradual dilatation, *never* internal urethrotomy, except in

urgent cases or where the stricture is "resilient"—that is, a stricture that "will stretch like an elastic band and then contract again." Internal urethrotomy behind the triangular ligament is condemned under all circumstances, and external urethrotomy is as strongly urged for all strictures in this situation not curable by dilatation. Urethrotomy is condemned, as above, mainly for the reasons that as much can be secured by dilatation; that in either case dilatation must be indefinitely continued afterwards, and because the operation is far from being without inherent dangers. Divulsion is described as barbarous, unskilful, and a thing of the past. Cocaine as a urethral anæsthetic is condemned as an unsafe agent.

Certain of the complications of urethral gonorrhœa, such as gonorrhœa of other mucous membranes, gonorrhœal rheumatism, and acute and chronic gonorrhœal affections of the seminal vesicles (a knowledge of which conditions appears destined to revolutionize our ideas of the pathology and treatment of disorders of this region), and of the Fallopian tubes and peritoneum, receive neither mention nor consideration. On the other hand chancroid is described, but very well described, under the general heading of "Gonorrhœa and its Complications."

The chapters devoted to Syphilis are acceptably written by Dr. Hayden, presenting an abstract of the most generally taught doctrines of the subject, and following the general lines of one or two monographs of great popularity. The manifestations of syphilis as affecting each particular organ or region are elaborately, yet tersely, set forth, thus—as is characteristic of every portion of the work—making the essay valuable for clinical reference. The now generally accepted belief is laid down that the diagnosis between infecting and non-infecting chancres cannot and should not be made, and that treatment for syphilis should never, excepting under certain self-evident but rare circumstances, be commenced prior to the appearance of secondary symptoms. Excision or other radical treatment of the primary sore is also condemned as useless in preventing constitutional infection; the lesion being regarded as a systemic, not a local symptom. Conventional treatment is advocated; it should be intermittent and extend over a period of from two to four years.

In press-work and freedom from typographical blemishes the volume leaves little to be desired. The illustrations, borrowed almost without exception from standard works, in the main very well elucidate the text. A good plate of the gonococcus would add to the completeness of the manual.

T. S. K. M.

THE JOHNS HOPKINS HOSPITAL REPORTS. I. REPORT IN PATHOLOGY.
AMEBIC DYSENTERY. By WILLIAM T. COUNCILMAN, M.D., and HENRI
A. LAFLEUR, M.D. Baltimore: The Johns Hopkins Press, December, 1891.

THIS is an admirable study of a subject of general medical interest, and is conducted in a thoroughly scientific manner. Most of the work termed pathological is undeserving of the title, because it is confined to but one aspect of a many-sided subject. The true pathologist is he who endeavors to trace the relations between lesions and symptoms, and

who must, therefore, be a clinician as well as a histologist. This first report on pathology from the Johns Hopkins Hospital is based upon clinical studies, and, it is to be hoped, will be an accepted model for further researches in the same field.

Before the publication of this report the existence of a form of dysentery due to an amœboid organism was recognized by a few, but, in future, it will be acknowledged by all. One of the strongest arguments in its support is the fact that it is frequently followed by an hepatic abscess presenting certain well-marked anatomical features, which distinguish it from all other forms of suppurative hepatitis. Our remarks will be confined to this relation between amœbic dysentery and hepatic abscess.

When the attention of the profession was first called to the relation between abscess of the liver and dysentery, it was supposed that the latter was secondary to the former, and induced by altered bile. In 1842, Dr. Budd, of England, perceived the true connection between the two diseases, and for a considerable period the view that hepatic abscess, when associated with dysentery, is secondary to the latter, met with general acceptance. Gradually, however, doubts concerning this fact began to rise, and it is no wonder that they became prevalent, for they were suggested by those whose experience of both diseases was greatest—i. e., by physicians practising in India. It was argued that abscess of the liver does not occur in all epidemics of dysentery, and is comparatively uncommon in some countries where dysentery prevails. Now, admitting the truth of this observation, it might be due to the fact that the complex of symptoms called dysentery is not always the result of the same cause, and if this were demonstrated to be true, it might be further ascertained that some forms of dysentery are more liable than others to be followed by hepatic abscess. Both of these suppositions are undoubtedly correct. There is, as above stated, a form of dysentery caused by an amœboid organism in the large intestine which is peculiarly apt to be associated with abscess of the liver. The existence of this "amœbic dysentery" was long ago established by the researches of Lösch, Kartulis, and others, whose observations have been confirmed and extended by Councilman and Laffeur. Their report, based upon a study of fifteen cases, is the most valuable addition yet made to our knowledge of the subject. Among their conclusions is the following:

"Abscess of the liver, with or without involvement of the lung, is a frequent complication, much more so than in any other form of dysentery. The involvement of the lung may early follow hepatic involvement, and be detected by the occurrence of amœbæ in the sputum before there is evidence of liver abscess. These abscesses differ in their anatomical features from those produced by other causes. The chief difference is found in the absence of purulent inflammation, the abscess being caused by necrosis, softening, and liquefaction of the tissue. In these liver abscesses the amœbæ are not associated with other organisms."

It certainly sounds contradictory to describe as an abscess the result of a non-suppurative process, but in reality confusion is doubtless avoided by so doing, for the appearances described are universally spoken of as hepatic abscesses.

Although the primary focus of inflammation in these amœbic "abscesses" is in the portal district, it is probably by other channels than

the venæ portæ that the amœbæ gain access to the liver. They do not enter the organ *via* the lymphatics, for they are not found in the lymph-glands belonging to the infected portion of intestine. The most significant fact with reference to this question of the route pursued by the amœbæ from the intestine to the liver is, that the abscesses in which they are found are on the under surface of the right lobe of that organ, in the immediate neighborhood of the hepatic flexure of the colon, and on the upper surface just beneath the diaphragm. When abscesses occur in the lung in these cases they are found in the lower lobe in contact with the diaphragm. Now, if the amœbæ were carried by the blood-current, the abscesses to which they give rise would not show such decided preferences as to site; and, on the other hand, these preferences are satisfactorily accounted for by a direct migration from the colon to the liver, in the cases of abscesses on the inferior surface of that organ; or by an indirect one *via* the peritoneal cavity, in the case of abscesses on the superior surface of the liver. This theory is confirmed by the constant site of abscess when it occurs in the lung, in the lowest portions of that organ—*i. e.*, at the point nearest the hepatic abscess.

One of the strongest arguments of those who deny the dysenteric origin of hepatic abscess is, that after death from the latter disease the most careful search has sometimes failed to reveal any sign of recent or old inflammation in the large intestine. Now, in such cases, it is possible that the amœbæ may have penetrated the intestinal wall and reached the liver without preceding ulceration of the colon. Couucilman and Lafleur refer to this possibility, and they also suggest the passage of the amœbæ to the liver from the duodenum *via* the biliary passages. "The whole question of these abscesses of the liver," say they, "is one that should be cleared up; and with the abundant opportunities for their study which are offered in India and other tropical countries, we have no doubt that it will be."

The reviewer would take exception to this latter statement, for he is inclined to agree with the late Dr. Fagge that "the etiology of a disease can best be studied and its origin best unravelled in the countries where it is not too common." We believe that the "whole question of these abscesses of the liver" is rather more likely to be cleared up in Baltimore than in India.

In conclusion, we trust that it may not be considered hypercritical to call attention to a decided contradiction of the statement that amœbic abscesses are not purulent. On page 402 of the report, where reference is made to a case reported by Osler, who, by the way, was the first in America to recognize amœbic dysentery, it is stated that the amœbæ "were present in large numbers in the *creamy pus*¹ of the abscess."

F. P. H.

NERVE PROSTRATION AND OTHER FUNCTIONAL DISORDERS OF DAILY LIFE. By ROBSON ROOSE, M.D. Second edition. Pp. xxii., 691. London: H. K. Lewis, 1891.

IN this somewhat bulky volume a large number of common functional diseases of the nervous system, and some disorders of the heart, lungs,

¹ Italics our own.

and digestive organs, are discussed. The subjects presented are neurasthenia, insomnia, hysteria, epilepsy, chorea, neuralgia, articular neuroses, headaches, vertigo, writer's cramp, facial paralysis, hypochondriasis, palpitation of the heart, syncope, angina pectoris, asthma, hay fever, dyspepsia, nervous vomiting, constipation, diarrhoea, and obesity. The author has had a large experience in the treatment of such diseases, being a popular London practitioner. He presents his subject in an easy, flowing style, and gives a fair summary of our present knowledge regarding these diseases. Recent investigation has been devoted rather exclusively to organic diseases of the nervous system, and advances have been made largely along pathological lines; the study of symptoms has been perhaps somewhat neglected, and therefore a work of this kind, devoted largely to functional affections and their treatment, has met with success. The first edition of the work was exhausted within two years of its publication; the present edition contains several new chapters, and has been well received.

It cannot be said that any considerable addition to our knowledge is made in this book. Facts which are already familiar are presented in an attractive manner, descriptions of diseases are vivid, and symptoms are quite exhaustively analyzed. The author fortunately avoids speculation as to the mechanism of functional diseases, and does not even give a new theory of hysteria, a temptation to which writers frequently yield. The study of the etiology is satisfactory, and his presentation of the very numerous methods of treatment which may be employed in functional affections is quite complete. He has few, if any, original suggestions to make in the management of these disorders, but quotes freely from other writers, and indicates the methods which have, in his hands, met with success. In fact, the sections upon therapeutics are of considerable value to the general practitioner, for they contain a full account of almost every method of treatment in the functional disorders described. The book may, therefore, be recommended to those who need assistance in the management of functional nervous diseases.

M. A. S.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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THE TREATMENT OF TUBERCULOSIS BY CANTHARIDINATE OF POTASH.

In the *Therapeutische Monatshefte*, 1891, No. 11, S. 557, we find an excellent paper, in which is recorded the result of treatment of twenty cases of laryngeal and pulmonary tuberculosis, by DR. THEODOR HERYNG. He employed the preparation four times stronger than that recommended by Liebreich, in order to avoid the injection of a large amount of the solvent. Pain was prevented by preliminary injection of a few drops of a 10 per cent. cocaine solution. The various sites of injection were between the shoulder-blades, epigastric, hypochondriac, and subclavian regions, all equally painful. The average dose was two-tenths of a milligramme (one three-hundred-and-twentieth of a grain), the maximum dose twice that quantity. With the latter dose occurred symptoms of irritation of bladder and kidneys, as follows: Pain and burning on micturition, daily amount of urine increased, and it contained albumin to 1 per cent., but never blood, excepting a few cells, nor casts. In patients previously free from fever, a moderate rise of temperature was sometimes observed four to six hours after injection, which disappeared without perspiration. The voice was almost immediately improved; the expectoration easier to raise, foamy and copious; number of bacilli unchanged.

His conclusions are: 1. In the early period of laryngeal tuberculosis—*i. e.*, superficial ulceration of vocal cords and infiltration of posterior wall of larynx—in some cases there followed a swelling of the infiltrated areas, and, through serous inhibition of the base of the ulceration, rapid cleaning up of the same followed. The healing of the ulcers was favorably influenced. In the use of the average dose (above cited) there was not noticed any irritation of the urinary apparatus. In severe cases, in badly nourished individuals, or in case of hectic, or when there exists irritation of intestines or kidneys, this treatment is contra-indicated. In doses one-half larger than above mentioned, symptoms of kidney and bladder irritation, backache, weakness, and

slight diarrhœa, but of several days' duration, appear. In cases of moderate severity, after prolonged medication with large doses, rapidly increasing œdema of the infiltrated areas and in the neighborhood of the ulcers, increases the dysphagia, which, however, of itself rapidly disappears.

CHROMIC ACID IN ORAL SYPHILIS.

DR. ERNEST FEIBES gives a very careful review of the literature of the local use of chromic acid in the treatment of syphilitic diseases of the cavity of the mouth (*Ibid.*, S. 578). Concentrated solutions in water, from 10 to 50 per cent., are applied with a camel's-hair brush, and the mouth, after two or three minutes, rinsed out with chloroform water to remove the taste as well as the excess of acid. He regards it as the best local treatment in syphilis of the mucous membranes, even after an extensive experience with applications of silver.

HYDRASTININ.

DR. PAUL STRASSMANN, in the *Deutsche med. Wochenschrift*, 1891, No. 47, S. 1283, presents a very thoughtful paper upon this drug, which is to be distinguished from hydrastin. The dose is: in form of pill, one-half grain each; in subcutaneous injection, one to two grains. The results of administration in twenty-seven cases lead him to believe it to be a very valuable remedy in the menorrhagias and metrorrhagias due to various pathological conditions so often met with in gynecological practice. At present, however, the remedy is quite expensive.

[This preparation bids fair to displace the use of the fluid extract of *hydrastis Canadensis*, now so widespread in this country.—ED.]

ANTIFEBRIN AND PHENACETIN DERIVATIVES.

DR. HANS ARONSON (*Ibid.*, S. 1285) adds much to our knowledge of the method of action of the acid derivatives of antifebrin and phenacetin. Reviewing the work of Ehrlich, Liebreich, and Penzoldt, in regard to the modification of the properties of these drugs by the insertion in the molecule of various groups (sulphur, carboxyl, benzol), he concludes that the solution of the problem of obtaining soluble antipyretics among the derivatives of acetanilide and phenacetin lies not in the introduction into the molecule of acid, but of basic groups. As an example, he cites phenocoll, which is an amidated phenacetin and bears the same relation to it as glycocoll does to acetic acid, and promises to be a valuable antipyretic, as well as a prompt and safe remedy for the relief of neuralgia, in doses of from eight to fifteen grains, repeated at hourly intervals.

CHLORALAMID IN CARDIAC AFFECTIONS.

DR. T. HOBART EGBERT, in *New Remedies*, 1891, No. 6, p. 61, reports the results of the administration of this drug in four cases. The indications for its use were: 1, nervousness and insomnia; 2, alcoholic subject, highly delirious, making much disturbance; 3, irritable heart; 4, almost intolerable

and constant cephalalgia. The amount of chloralamid should not ordinarily exceed 120 grains in the twenty-four hours. It may be combined with brandy, compound tincture of gentian, tincture of belladonna, or compound spirits of lavender, as the necessities of the case may demand.

THE SYRUP OF HYDRIODIC ACID.

A practical paper, by DR. ATKINSON (*Ibid.*, p. 62), in which the preparation recommended contains 6.67 grains of pure hydriodic acid in each ounce. He advocates its use in the spasmodic seizures of asthma and whooping-cough, in resulting consolidation of pneumonia, fibrous hardening around tubercular deposits in phthisis, in bronchorrhœa of old people, scrofula and scrofulous ophthalmia, lymphatic enlargements of the glands of the neck and groin, later forms of syphilis, in goitre, rheumatism, both acute and chronic, and in many chronic skin affections, in the treatment of obesity. The various adjuvants which will result in useful and not inelegant formulæ are: compound tincture of cinchona and syrup of senega, sulphate of codeia and compound tincture of cardamom, syrup of tolu, elixir of calisaya, sulphate of morphine, hypophosphite of soda, the same combined with the same salt of lime, tincture of the citrate of iron, wine of tar, fluid extracts of grindelia or gelsemium, tincture of valerian or belladonna, fluid extract of grindelia with infusion of the leaves of the common chestnut. The wide range of usefulness, the many advantages over other iodine preparations, the small number of substances which are incompatible, are strong arguments for the more general use of this drug, of which there are several reliable manufacturers.

THE MECHANICAL TREATMENT OF ERYSIPELAS.

PROF. WÖLFLE reports thirteen cases treated by application of adhesive plaster around the area involved (*The Medical Press and Circular*, 1891, No. 20, p. 461). The hair is removed from the surface before the application is made. The plaster must be allowed to remain at least two or three days after the redness and fever have gone. This treatment is more valuable when the disease is situated on the face than on the extremities.

LYSOL.

In an unsigned paper (*Ibid.*, No. 5, p. 49) the subject of the cresols is clearly presented. Starting with Fränkel's view, that the antiseptic virtues of creolin depend upon some higher homologues of phenol, it was believed that the cresols in soluble form would be more active as disinfectants than in emulsion. The result of this study was the production of lysol, which contains 50 per cent. of cresols, is miscible with water, and forms clear solutions with alcohol, petroleum or benzene, chloroform, carbon bisulphide, and glycerin. Gerlach, Schottelius, and Simmonds have found it active and prompt in arresting the development of microorganisms. Cramer, Wehmer, Michelsen, and Haenel have recommended it for surgery and gynecology; Lemke and Straube for veterinary purposes. Fürbringer believes that after cleansing the nails with a one-half to one per cent. solution, the hands being

immersed two or three minutes, using a brush, other disinfection is unnecessary. This process does not attack the hands, but, on the contrary, makes them soft and supple. For sterilization of instruments, one-fourth of one per cent. solution is sufficient. Cramer and Wehmer believe that it is five times stronger than carbolic acid, and one-eighth as poisonous. In addition, when one considers the weak solutions necessary, it is relatively cheap.

ANTIPYRINE.

SURGEON PATRICK HEHIR, in the *Indian Medical Gazette*, 1891, No. 10, p. 292, argues that smaller doses than advised by Lauder Brunton, Ringer, Bartholow, and Waring, are efficient, if the intervals be short. In India, he believes that the maximum dose of from ten to fifteen grains should not be exceeded, and that even this quantity should not be frequently repeated, except under extreme circumstances.

In malarial fevers, especially of the remittent type, the small-dose method systematically adopted, and combined with ordinary diaphoretics during each day's exacerbation, will keep the pyrexia within bounds, reduce the headache and pains in the bones, as well as relieve, to some extent, the feeling of general discomfort, but it is not antiperiodic in its properties.

In the so-called "ardent fever"—a condition coming on usually after exposure to the sun, and manifesting itself in a dry, pungent, or hot skin, with a temperature of 104°-106° F., full bounding pulse, intense headache, and, it may be, delirium, the fever lasting for from two to six days—it is an extremely valuable remedy.

THE TREATMENT OF GASTRIC HYPERSECRETION.

The gastric dyspepsia which is the result of hypersecretion—the gastro-succorrhœa of Reichmann—is believed by MM. BOUVERET and DEVIC to be far from infrequent (*La Semaine Médicale*, 1891, No. 55, p. 218). Two forms are so distinguished: the intermittent and the chronic. The first is frequently found in the course of certain organic diseases of the nervous centres, such as general paralysis, sclerosis *en plaques*, and particularly locomotor ataxia. The more frequent form—the chronic—calls for the fulfilment of four indications: 1. To remove all causes of irritation of the mucous membrane of the stomach. 2. To prescribe a regimen in accordance with gastric chemistry, and, at the same time, sufficient for nutrition. 3. To remedy the unfortunate results of hypersecretion. 4. To check the flow of gastric fluids.

The details of treatment are: 1. Forbid tobacco, alcohol, spices, tea, coffee; limit the amount of salt in the food, enforce mental quietude, and advise a calm life and rest in the country. 2. A meat diet, limited amount of fat, reduced quantity of starches, small amount of bread; for liquids, ordinary water, neither too cold nor too hot, with a few drops of rum or brandy only, amount limited to two glasses with the two principal meals. 3. Alkalies, such as two to five drachms of bicarbonate of soda in divided doses throughout the day, commencing one or two hours after the meals; washing of the stomach three or four times weekly. 4. Hydrotherapy under the form of a rain douche of short duration, or the cold wet pack, or the abdominal compress of Priessnitz.

THE TREATMENT OF ACUTE CROUPOUS PNEUMONIA.

DR. MARCEL BOUDOUIN, under the direction of *La Semaine Médicale*, has ascertained the various methods of treatment of this disease which are in common use in the hospitals of Paris (*Ibid.*, pp. 222, 223). M. Cornil, seeming to regret that venesection is obsolete, at the outset directs wet cupping, blistering, alcoholic stimulation, and Dover's powder to favor perspiration. M. Dujardin-Beaumetz uses caffen in preference to alcohol, recommending also kola; for nervous manifestations, chloral, or, in alcoholic subjects, paraldehyde, blistering only when the signs are persistent. M. Peter treats his pneumonias according to their condition: wet cups in early cases, tartrate of ammonium frequently, but according as they are robust, debilitated (with alcohol), or bilious. M. Bucquoy believes in bleeding and tartar emetic, sulphate of quinine, and blisters. M. Rigal has practised intra-pulmonary injections of antiseptic substances (sublimite, etc.), also administers sulphate of quinine and uses cold baths. M. Moizard, in adynamic forms, injects ether or caffen, and even spartein. M. Oulmont uses these remedies with small doses of digitalis. M. Huchard uses ether, camphor, or digitalis, and avoids all depressing remedies, as antimony.

[Evidently there is no consensus of opinion among the Parisian clinicians in regard to the character of the disease or its mode of treatment, for we find all variations of practice, from treatment directed toward certain symptoms, treatment based on the results of post-mortem investigations, or that suggested by the findings of the bacteriological laboratory. The report in question, although containing the views of many physicians, is entirely unsatisfactory, because these views are presented very briefly, nor can we believe that it accurately represents their practice.—ED.]

POISONING BY MALE FERN.

PROF. LÉPINE (*Ibid.*, No. 57, p. 465) gives an account of the symptoms and pathological appearances of a fatal case of poisoning which was reported by Dr. Eich. For the cure of ankylostoma a man of fifty-four years received about four hundred and fifty grains of the extract, according to the method of Perroncito, in two doses, before ten o'clock in the morning. At noon there was difficulty in breathing; appeared as if suffering from tetanus; there was intense trismus, rigid abdomen, sensation of constriction at the base of the chest, slow respiration, pulse 132, skin covered with perspiration, general rigidity, opisthotonos, patellar reflexes exaggerated, and each percussion of the tendon gave rise to a tetanic contraction of the whole body; cyanosis. On account of the trismus, vomiting could not be produced by apomorphine, so subcutaneous injections of morphine were made, and enemata of chloral. For two or three hours the tetanic crises increased in frequency, and death followed. On necropsy there was found in the stomach a yellowish fluid, having the odor of male fern. Mucous membrane of the stomach was red and congested; the lower part of the ileum very red, that of the large intestine healthy. The writer cites briefly three other cases; the doses varied from two and a half to three and three-quarters drachms. The symptoms were vomiting, diarrhœa, vertigo, trembling, coldness of the extremities. All of these cases recovered. He believes that two drachms should be considered the

maximum dose. The strength of the extract varies greatly, and, according to M. Béranger-Feraud, it may be that the plant has more or less poisonous properties, according to the region in which it grows. We find these large doses frequently mentioned only in the German and Italian text-books. In France the safe dose is considered to be much less.

TREATMENT OF DIPHTHERIA.

In the *Deutsche medicinische Wochenschrift*, 1891, No. 48, S. 1299, PROF. STRÜBING accepts the statement of Löffler, that the treatment should fulfil three indications: 1. It must influence the vitality of the bacilli, and limit their further production. 2. It must destroy the operation of the poison already introduced. 3. It must prevent the invasion of other microorganisms. Although no treatment now exists which meets all these indications, yet he recommends for local application an alcoholic iodine-phenol solution, alternating with the liquor of the sesquichloride of iron and of sulphur. Careful cleansing of the throat by large quantities of gargles, especially of lime-water. For internal treatment an hourly dose of a teaspoonful of a one-tenth of one per cent. solution of cyanide of mercury. Löffler recommends also local applications of a three to five per cent. solution of carbolic acid in forty parts of rectified oil of turpentine and sixty parts of absolute alcohol. He reports cases illustrating this treatment.

[While this contribution is based upon the bacteriological work of Löffler, and is consequently theoretical, yet the effort to produce a treatment that is practical has been successful. The essential points differ only in detail from those that have been insisted upon by our best clinicians during the past few years. The paper is a valuable one, and the conclusions are formed after a careful discussion of the facts furnished by the laboratory and the clinic.—Ed.].

ARISTOL FOR INFANTILE ICHTHYOSIS.

In three cases DR. DESCROIZILLES has obtained brilliant results, although he does not, as yet, believe them to be permanent. The improvement is marked as early as the fifth day, and the remedy does not give rise to any irritation or other inconvenience (*Revue Générale de Clinique et de Thérapeutique*, 1891, No. 44, p. 685). The preparation used is a 5 or 10 per cent. solution in fat; in a larger percentage it might be irritant. In these cases, however, Fowler's solution was used internally, although the utility of general medication is doubted by some.

THE TREATMENT OF HEPATIC INSUFFICIENCY.

DR. HENRI HUCHARD (*Ibid.*, No. 49, p. 765), taking for his text the statement that for the health of the organism "it is necessary that the kidney remain open and the liver closed"—the kidney open for the elimination of poisons, the liver closed to stop or destroy them—offers as practical conclusions his method for meeting these indications: 1. To assist the glycogenic function of the liver. 2. To assist the emunctory function of the kidney. 3. To exhaust all sources of intoxication, and especially those from the intes-

tine. A milk diet fulfils the first two indications, and, indeed, the third, for it has been shown that milk diminishes the poisonous properties of the urine. It contains sugar, which can be transformed into glycogen; it favors diuresis and elimination of poisons by way of the kidney; and, besides, it can nourish the patient. To meet the third indication, intestinal antiseptics are insisted upon. One must forbid all alkaloids, all salts of potash, replacing the iodide or acetate of potash by the soda salt; even to exclude foods containing much potash, as meat or bouillon. Here, indeed, milk, weak in potash salts, is indicated. To combat the terminal condition of adynamia we can resort to injections of ether, caffeine, or camphor—the last preferable to caffeine, because we should use remedies absolutely harmless.

INTESTINAL ANTISEPTICS.

In the same journal, No. 37, p. 584, we find the following excellent formulæ for obtaining antiseptics in patients suffering from cancer of the stomach. The prescriptions are to be taken immediately before each meal. For flatulence and gaseous eructations, four grains each of salicylate of bismuth and naphthol, eight grains of powdered charcoal. If constipation is a marked symptom, five grains each of salicylate of bismuth, magnesia, and bicarbonate of soda. Salol and bicarbonate of soda in seven-grain doses, with possibly the addition of the same amount of salicylate of bismuth, is the most approved treatment when diarrhoea is persistent. In the form of powder these drugs are brought in contact with the wall of the stomach for a longer time.

SALICYLAMIDE.

A preliminary note on the pharmacology of this new modification of a long and favorably known remedy—salicylic acid—is presented by DR. W. B. NESBITT in the *Therapeutic Gazette*, 1891, No. 10, p. 688. If, as is stated by Schmiedeberg, Brunton, and others, there is an especial stimulating action in the amidogen radical, the amide of salicylic acid should be safer than salicylic acid itself. It has been prepared by Limpricht by the action of concentrated ammonia on methyl-salicylate (oleum gaultheria, Nesbitt), standing together in the cold for several days. By means of charcoal pure crystals can be obtained—soluble in alcohol, ether, chloroform, and water; twice as soluble in cold water as salicylic acid, but readily soluble in hot water; it is tasteless, but gives gritty sensations between the teeth. It can be detected in the urine by the ferric chloride test; excreted, to a slight extent unaltered, but chiefly as hydrocyanic-hippuric acid, preventing putrefaction for months. The author concludes:

Pharmacologically: 1. It prevents conduction in nerves; paralyzes nerve first, then muscle. 2. Its chief effect on the heart, most probably through its activity on conduction, is on the motor apparatus. 3. It diminishes (a) spinal reflex for motor impulses, (b) spinal conductivity for painful impressions, (c) muscular irritability. In mammals it has no particular effect on respiration, nor on blood-pressure. In medicinal doses it reduces temperature, causes ataxic gait, and hebetude in fowls.

Therapeutically: 1. It has no taste. 2. It is more soluble than salicylic

acid. 3. It acts more promptly. 4. It acts in smaller doses. 5. It has greater analgesic properties. 6. It is pharmacologically safer.

DYSMENORRHOEA.

DR. LIÉGEAIS (*Ibid.*, No. 38, p. 595) presents a very thoughtful communication on this subject. In dysmenorrhœa of dyscrasic origin he employs the tincture of piscidia erythrina (Jamaica dogwood) in twenty-drop doses every two or three hours in place of the usual narcotics. In the intermenstrual period he advises remedies to correct uterine and ovarian atony. In the pre-menstrual week, pills of aloes and rue, while the chlorotic subjects need iron in company with myrrh, asafoetida, and like remedies. In plethoric individuals, a combination of acetate of ammonia, tincture of piscidia, and tincture of valerian is recommended. The neurasthenics require the tinctures of piscidia, viburnum, and amber or castor. In dysmenorrhœa of organic origin, he adds to the above formula the tincture of pulsatilla. If it is necessary to limit the amount of flow, he advises the addition to the piscidia of viburnum and pulsatilla, cannabis Indica, and hydrastis Canadensis, and in certain cases the ammoniated tincture of guaiac and capsicum.

[Although the employment of these remedies may seem to the gynecologist to savor of empiricism, and to have but little place among the resources of the operating specialist, yet many patients refuse surgical methods altogether, others are inaccessible to operators, so that the field for the use of these remedies is by no means limited. The popularity of nostrums containing these drugs is evidence that there is good reason for their use.—ED.]

ANTIPYRINE.

M. B. MARTIN, in *L'Union Médicale*, Nos. 125, p. 565; 126, p. 577; 128, p. 601, adds much to the statements of the uses of this drug as found in the treatises on therapeutics, believing that its antipyretic properties have overshadowed others equally valuable. It is useful in hemorrhage, in that it locally will contract bloodvessels, and, indeed, it is an antiseptic. During operations a one-to-twenty, in epistaxis one-to-five, in coryza one-to-thirty solutions are used. It is valuable in laryngeal affections (catarrhs, stridulous laryngitis), asthma, broncho-pneumonia, pleuritic effusions, when given internally. As an anti-galactagogue, ten to twenty grains, several times repeated; for incontinence of urine (should be given at 9 or 10 P.M.), for diabetes insipidus and true diabetes (up to a drachm daily); for uterine cancer (Chéron); and in dysmenorrhœa it relieves pain. Even the pains of labor are mitigated. Exophthalmic goitre, nocturnal pollutions, pains of tubercular meningitis, hemeralopia, asthma, either essential or of cardiac origin, distress of aortic aneurism, trigger-finger (subcutaneous injection)—all have been benefited; infantile diarrhœas (Saint-Philippe); with cocaine in obstinate vomiting (Struver). Some dermatoses, as urticaria, erythema nodosum, senile pruritus, and other conditions, where exceptional benefit has been obtained, complete the somewhat extensive list. The paper closes with a statement of the accidents that may be caused by this remedy.

THE PROPHYLAXIS OF ABSCESS OF THE BREAST.

M. PINGAT (Thèse de Paris, 1891) presents a valuable contribution for the prevention of an exceedingly disagreeable complication. He points out that massage may be an efficient cause, unless very gently done and the hands are absolutely clean. For cleanliness he recommends thorough washing in soap and water, followed by immersion in a sublimate bath. As an ointment, that of Dubois is recommended—viz., equal parts of oil of sweet almonds, cacao butter, and tannin, although we now avoid fatty bodies, and may, in place of this preparation, use the alcoholic lotions of Tarnier and Chantreuil, rum or good cognac, repeated twice in the day. Tarnier directs that every woman at the time of labor shall have a full bath. The toilet of the breasts should be made after delivery with soap and water, and they should be covered with compresses, kept continually moist with a one-fifth of one per cent. solution of bichloride of mercury, evaporation being prevented by a layer of rubber cloth, the whole being kept in place by a bandage. The breast must be washed with borax water, or with a salt solution, before giving the breast to the child. Should the mother forget this precaution, mercurial poisoning is not likely, as the amount absorbed by the child would be small.

 TURPENTINE IN THE TREATMENT OF RENAL CALCULI AND GALL-STONES.

DR. C. H. RALFE, in the *Lancet*, 1891, vol. ii. p. 1271, states that the object of the administration of turpentine in conjunction with so-called solvents and diuretics is to assist in the expulsion of any concretion already formed, and to prevent the formation of others. The mode of action, in causing expulsion, has been stated to be from its powerful diuretic action, especially if given in small doses for some time; but if there is much colic and a tendency for the stone to pass, it may cause strangury, and thus have an opposite tendency. It also decidedly increases the colic, and it would appear as if it actively stimulated the muscular fibres of the pelvis, of the kidneys and ureters, and also of the gall-bladder and bile-ducts. In long-standing cases, turpentine aids the passage of a calculus by improving the condition of the mucous surface of the ureters and bile-ducts; for by diminishing the swelling caused by the catarrh there is less resistance presented to the onward passage of the concretion, and, especially, allowing it to pass if it is quite small. As a preventive it renders the secretion less tenacious and viscid—that colloid medium, which writers insist upon as essential to the development of concretions. It also acts as an antiseptic on the bile secreted, and thus prevents the precipitation of cholesterolin, which becomes less soluble as bile loses its alkaline reaction—which takes place when fermentation sets in. Durande's elixir is mentioned (one part of sulphuric ether to two of turpentine), and as well the method of Trousseau (a combination of alkalis with turpentine, administered in capsules).

 THE TREATMENT OF ENTERIC FEVER BY LIQUOR SODÆ CHLORINATÆ.

DR. T. C. PEARSON (*Ibid.*, p. 1273) states that in six years he has treated hundreds of cases of enteric fever in South Africa with this remedy without

a single death. The dose usually prescribed is fifteen minims every three hours in an ounce of water, and with milk for food, stimulants being interdicted. The solution must be perfectly clear, free from lime, and kept in a dark and cool place. The treatment is continued until the temperature has been normal for two successive evenings.

ANÆMIC CATAPHORESIS.

While the subject of cataphoresis is attracting so much attention, the scholarly paper of DR. WILLIAM J. MORTON, which furnishes many new and practical suggestions, is timely (*New York Medical Journal*, 1891, vol. liii. p. 473). He produces anæmia of a member either by an Esmarch's bandage or by rubber rings such as are used upon umbrellas; when these methods cannot be used, he exercises compression with the narrow edge of a disc-shaped electrode, or simply by a ring of hard material held firmly against the skin, and within whose circumference the cataphoric electrode is placed. The medicine in this way is limited to that portion of the body in which we wish its action to be exerted. He incorporates the medicament in a small plaster which is composed of conducting material in itself not capable of electrolysis, such as pulverized gas carbon. Cohesion into a plaster and adhesion to the skin are obtained by gelatin. For use the medicated plaster is moistened, held by a flat carbon electrode against the part, and a current of from five to fifteen milliampères used. In this way the dosage is exact, but to get the fullest effect the medicine should be placed at both poles, and not alone at the positive. The method outlined is especially useful in gouty or rheumatic joints, whether subacute or chronic.

[The unsatisfactory results of general medication in these chronic conditions, and the partially successful local treatment by cautery or blister, give abundant opportunity for this method of treatment, which promises brilliant success.—ED.]

THE TREATMENT OF CONSUMPTION BY THE HYPODERMATIC ADMINISTRATION OF GUAIACOL AND IODOFORM.

DR. B. ROBERTSON, having become familiar with the work of Roussel, Shetelig, Dreschfeld, and Picot, determined to give this method a trial (*British Medical Journal*, 1891, No. 1611, p. 1040). He used one-sixth of a grain of iodoform, five times that amount of guaiacol, in fifteen drops of olive oil, increased by degrees to three times these amounts. At the seventh injection he doubled the dose; at the twenty-first he trebled the original amount, and discontinued at the thirtieth injection, only to resume at the request of the patient. From three cases of empyema and twenty-five of consumption, some in earliest stage, the majority with cavities in one or both lungs, two or three being so far advanced that no improvement could be expected, he concludes: 1. That in empyema with free drainage it improves the general condition and diminishes the discharge, but without drainage it is of uncertain value. 2. That in pyrexia phthisis, whether disease is small or extensive, it is not an absolutely certain antipyretic, but commonly is of decided advantage if persevered in, and so diminishes the activity of the disease. 3. If it fails in modifying fever, it, in most cases, diminishes expectoration and

modifies cough. 4. Although limiting waste, this treatment is not especially favorable to increase of body weight. 5. It is without risk, with ordinary precautions. 6. It does not prevent development of other tuberculous outbreaks, or extension of tuberculous mischief. 7. Its anti-parasitic action must not be exclusively thought of, for Headland has described creasote as a sedative, a stimulant of mucous membranes, and as a true astringent.

[In connection with this carefully prepared report should be read that of DR. C. BERETTA on the use of dog's serum in the treatment of tuberculosis, which was presented at the same time at the Section of Therapeutics at the annual meeting of the British Medical Association, held in Bournemouth, July, 1891 (*Ibid.*, p. 1041). He sums up: Dog's serum, also called hæmocyste, in man or in animals, does not seem to have a special curative action against tuberculosis, but it possesses a powerful action, if not against the microbe, at least against its effects. It seems to act as a powerful tonic, and indirectly by improving the general nutrition puts the patient in a better condition to overcome his terrible disease.—ED.]

MEDICINE.

UNDER THE CHARGE OF

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MEDIASTINO-PERICARDITIS IN CHILDREN.

DR. HENRY ASHBY, of Manchester (*Medical Chronicle*, 1891, vol. xv., No. 3) records two cases of this disease, which illustrate clearly the grave interference with respiration and circulation which this disorder entails.

He points out that the loose areolar tissue of the mediastinum is certain to share the same pathological fate as the structures or organs with which it comes into relation.

The inflammatory process may arise in the lymphatic glands at the bifurcation of the trachea, in the lung, or the pleura. The pericardium is nearly always implicated, either primarily or secondarily. Post-mortem it is often impossible to say where the process originated. The consequent matting together of all the important structures in the mediastinum—by means of a cicatricial tissue, which is often of cartilaginous toughness—must necessarily greatly impair the movements of the heart and lungs. Hence among the effects of mediastino-pericarditis, œdema, ascites, and chronic hepatic congestion are prominent.

The greatest effect appears to be exerted on the hepatic system, leading to enlarged and nutmeg liver, with portal obstruction and gradual ascites, and in some cases to a secondary cirrhosis of the liver, from long-standing congestion.

Clinically, the early symptoms are usually indefinite. A pericardial or exocardial rub may be detected. In most cases ascites is the first marked symptom. Associated may be some œdema of face, or distended cervical veins, suggesting some obstruction to the return of blood to the lungs.

Sooner or later a smooth or irregular and bossy enlargement of the liver may be felt. Some cases are very chronic, and are relieved for a time by tapping; but sooner or later general œdema supervenes. In other cases—tubercular ones especially—the course of the disease is more acute, owing to extension of the tubercular process to other parts. Careful examination of the chest may reveal an increased area of dulness over the sternum and front of the chest where extensive matting of the anterior edge of the lungs and pericardium to the surrounding structures has taken place.

The weakening of the pulse during inspiration, on which much stress has been laid by some writers, was not observed in either of Ashby's cases.

The condition is one which may easily be overlooked. But it may be well to bear its characters in mind in the presence of cases of ascites with hepatic enlargement in young children.

THE DYSPNŒA OF ADVANCED BRIGHT'S DISEASE.

DR. GRAHAM STEELE contributes an article to the *Medical Chronicle* (1891, vol. xv., No. 1) to support the contention that this dyspnœa is due to heart-failure rather than toxæmia.

The author does not question the part played by "renal inadequacy" in imposing impediments to the circulation, but maintains that the eventual failure of the left ventricle thus entailed is the chief exciting cause of the dyspnœa in question. It differs in no essential point from the dyspnœa of heart disease quite apart from kidney disease, whereas, in the author's experience, it bears little or no resemblance to the irregularities of respiration, apart from lung disease, which occur in the "typhoid state" of continued fever, where we might fairly look for traces of toxæmic dyspnœa.

The dyspnœa in question is usually associated with other evidence of disturbed circulation, and no safe reliance can be placed on the distribution of the œdema as serving to distinguish renal from cardiac dropsy. The frequent occurrence of pulmonary apoplexy and the remarkable relief afforded by morphine hypodermatics are mentioned as favoring the cardiac rather than the toxæmic theory.

A SIGNIFICANT FACT IN THE DIAGNOSIS AND INTERPRETATION OF THE ALBUMINURIA OF ADOLESCENTS.

Under this title DR. CLEMENT DUKES, Physician to Rugby School, contributes an interesting paper (*Lancet*, 1891, No. 3564) on the disease known as "functional albuminuria," "cyclic albuminuria," "intermittent and remittent albuminuria," and so forth. The claims of these various terms to repre-

sent the disease are severally discussed and dismissed as misleading or inadequate. "The only name that will be really appropriate to this disease is one which designates its actual state as a hyperæmic or an inflammatory change in the vascular system of the kidney, or a hyperæmia depending upon a neurosis of the nervous supply (vasomotor) to the vascular system of the kidney."

The writer prefers the term "early albuminuria" as being most free from objection, although in some cases the state thus indicated may have existed on and off for some years.

It is quite clear that as long as the renal hyperæmia lasts, the liability to the transudation of serum through the over-distended capillaries must continue. It is also manifest that this exudation only occurs when there is any special stress on the circulation, as in assuming the vertical position after prolonged rest, or during active exertion, or after food. Undoubtedly "early albuminuria" is as pathological as any other disease; and, like the early stage of any other disease, may be transient and recoverable. In the author's opinion it is the habits of human beings which are cyclical, and not the disease. "If human beings roosted during repose in the upright position on perches, like the natural order Gallinacæ, the disease in question would possess no cyclical character."

The albuminuria is present or absent only intermittently at first, except, perhaps, in the very first instance, when, if the cause has been severe, it remains persistent for a time day and night, whether the position of the body be vertical or horizontal, and however carefully the regimen may have been selected. Also, as the case advances, the albuminuria usually becomes confirmed.

The "significant fact" arose in the following manner: It has been a long-established rule at Rugby that the whole school should meet together for prayers in the school chapel at 7 A.M. An alteration was made in this custom a year or two ago, when it was settled that on two mornings each week the school should assemble in the large hall to enable the head master to address the boys on various common school subjects at the conclusion of prayers. It was not deemed necessary to provide seats for these "fifteen-minute meetings."

The arrangement was in existence for a year or two, during which time the following events occurred:

"While it was exceedingly rare for a boy to faint during morning prayers in chapel, it became a common occurrence when prayers were held in the large hall where the boys had to *stand*. It was at first naturally assumed that the cause resembled that of the fainting incidental to militia training and volunteer encampments, especially church parades, through the constrained position of 'standing at attention.' (Are these similar cases, undiagnosed as yet?) Then it was assumed that it arose from the hall being hot and ill-ventilated compared with the chapel. But when I found that it was not the delicate boys who fainted, and that the sufferers had hard, rigid pulses, I at once saw that it was owing to early albuminuria; and, on analysis, this supposition proved to be the fact in nearly every instance. I have already referred elsewhere¹ to such cases, but here we had a most marked class of them—boys

¹ British Medical Journal, May, 1880.

getting up at 6.40 A.M. and rushing down to school. If they assembled in chapel where they could sit, faintness rarely occurred. The same set of circumstances existed, with the exception that the boys were required to stand for a few minutes, and thus by this differential examination the cause was at once discovered and the boys submitted to treatment. But seats have now been provided, and my diagnostic helpmate has failed me, so that the cases have to be traced in other and less pronounced ways. Could a more classical set of circumstances be presented, not only for the purpose of diagnosing cases, but also for their interpretation? Here we had a large number of boys going to bed and lying in the horizontal position for about eight hours and a half, and suddenly assuming the vertical position in the morning, often accompanied doubtless by a quick run of a hundred yards to school, and a flight of stone steps to be mounted on the mornings when they assembled in the large hall, and the circulation proving itself unable to meet the altered circumstances, and failing in the attempt. Is it not, therefore, perfectly manifest that these early cases of albuminuria, as I have already endeavored to show, arise from the condition of the circulation pure and simple? Any such stress upon the circulation, such as active exertion, will under similar circumstances reveal the presence of albumin in the urine.

"The following points present themselves as the result of this consideration of the subject: 1. It is not safe to make a diagnosis in any patient without an examination of the urine. 2. Are not all cases of early albuminuria, in their early stages, identical with the class of cases I have described? 3. If so, it is perfectly clear that these cases of early albuminuria, which are so common in the young, constitute the early stage of what eventually may become developed into the chronic disorganization of the kidney which is termed Bright's disease. 4. Would it not be well to come to some understanding as to its nomenclature, so that a uniform and appropriate name may be assigned to this disease, and that it may cease to be termed 'functional'?"

"The gist of the whole matter seems to be this: That where the hyperæmia of the kidneys is severe, the albuminuria is persistent, in whatever position the body may be placed, whether at rest or not, and whatever diet may be partaken; while, if the hyperæmia be slight, from the cause having been trivial, or from a severe attack which is passing away, then the albuminuria only shows itself when the body assumes the vertical position, or under exertion, or after a full meal; but if the hyperæmia be prolonged, however slight in degree, the albuminuria gradually becomes persistent, owing to the permanent dilatation of the bloodvessels, and tends to destruction of the kidneys."

THE ACTION OF DEAD TUBERCLE BACILLI IN THE LIVING BODY.

After considering the investigations of Buchner, demonstrating that a septic suppuration can be induced as a result of the so-called chemotactic influence of certain proteid matters, such as the bacterio-protein of the cell-body of microorganisms, vegetable casein, and certain of the decomposition products of animal tissue, PRUDDEN and HODENPYL (*New York Medical Journal*, 1891, Nos. 23, 25) detail the results of a study of the effects produced

in rabbits by the injection of dead tubercle bacilli, sterilized and freed from the metabolic products of bacterial activity. Bacilli obtained by culture on agar and in bouillon were washed with sterilized distilled water and boiled for from an hour and a half to four hours in a small quantity of sterilized water or two to four hours in a fifty per cent. glycerin solution in water, and filtered. The precipitate, washed and made into an emulsion with sterilized water, was injected into rabbits subcutaneously, into the pleura, into the peritoneum, and into the veins. In a considerable proportion of cases in which the injection was made, subcutaneously as well as into the pleura and peritoneum, small local abscesses developed in from two to six weeks. Each abscess was encapsulated and contained pus-cells, granular detritus, and readily stained, well-formed tubercle bacilli, together with involution-forms. Inoculations of guinea-pigs with the pus were followed by negative results. Attempted cultures also failed. When the emulsions were injected into the veins, bacilli could, at the end of twenty-four hours, be found in the capillaries, principally of the lungs, liver, and spleen. In the course of a week or two, the bacilli had largely disappeared from the bloodvessels, except in the lungs and liver. Nodules, composed of epithelioid, giant, and small spheroidal cells, and containing tubercle bacilli, could be detected in the lungs. In the course of from three to five weeks the number of nodules had increased, occasioning an appearance simulating that of miliary tuberculosis. In the liver, as early as the third week after the injection, swelling of the endothelial cells of the capillaries and islets of newly formed cells, containing bacilli, were found. Later, nodules resembling those in the lungs became visible. The number of bacilli contained in the nodules was smaller as the interval following the injection was longer. In no case was caseation or proliferation of tubercle bacilli observed. The purity of the results was confirmed by control experiments. Repeated attempts to isolate from the bacteria the peculiar protein to which are ascribed the results obtained were unsuccessful.

A CASE OF ACUTE PERFORATING OR ULCERATIVE AORTITIS IN WHICH THE BACILLI OF ANTHRAX WERE FOUND.

The case is recorded by DR. THOMAS OLIVER (*Lancet*, 1891, No. 3558).

A watchmaker, aged thirty-six years, was admitted to the infirmary with a greatly enlarged heart and much pain in the left chest and arm. There was a double aortic murmur, the diastolic being loud and cooing, and distinctly audible to the patient. There was also a loud blowing systolic mitral murmur and slightly pericardial grating at the apex and base of the heart.

The pain was more acute than that usually encountered in cases of mitral and aortic regurgitation. Tincture of convallaria gave some relief, but the pain and distress were eventually entirely relieved by one-eighth-grain doses of cyanide of zinc.

He subsequently attended for several weeks as an out-patient, and then died quite suddenly one day while out walking.

"The heart weighed twenty-four ounces. The aortic valves were incompetent; left ventricle extremely dilated and hypertrophied; myocardium very pale, gray, and mottled; mitral orifice dilated, but valve segments healthy.

On still closer examination, the aortic valves were seen to be quite healthy, but the aorta immediately above the orifice was dilated, and a distinct pouching was noticed just above the valves. Over a small area which lay between the mouths of the two coronary arteries, and which extended upward for nearly an inch and a half, the lining membrane of the aorta was extremely red; it was soft and ulcerated, and in two places was gangrenous. From the centre of this patch a small pouch protruded outward. Its wall was as thin as ordinary writing-paper; it was bluish-red and soft, and its floor was perforated by an opening the size of a large pin's-head. A plate of atheroma lay close upon the mouth of the left coronary artery. In my note of the necropsy, and which I shall interpose here, I find it stated: 'This inflammation and ulceration of the aorta is unlike anything that I have ever seen. It resembles ulcerative endocarditis; it has evidently been very acute, and has spread over a considerable surface. It seems to have begun as an acute aortitis which has rapidly run on to ulceration and necrosis.'

The specimen was referred to Dr. Sims Woodhead, who reported that abundance of bacilli were found in the sections bearing the closest resemblance to those of anthrax.

The patient, so far as is known, was never in contact with animals suffering from splenic fever.

"The lungs in my patient were practically healthy. As the necropsy was limited to the thorax, I can offer no opinion upon the state of the intestinal mucous membrane. His position in life would not bring him into contact with rags, nor is it likely that he could have worn clothing belonging to anyone who had suffered or died from anthrax, no cases of such disease having occurred in this district."

THE ETIOLOGY OF TABES DORSALIS.

To his previous contributions upon the subject, ERB (*Berliner klin. Wochenschrift*, 1891, Nos. 29, 30) adds the results of painstaking observations upon three hundred and seventy further cases of tabes dorsalis from his own practice. The cases are divided into three groups: those occurring in the better class of patients, those in the lower classes, and those in women. In the first group there was a history or there were present manifestations of syphilis in 89.2 per cent. of the patients; in the second group, in 76 per cent.; and in the third, in 89.5 per cent. In three hundred cases among the better class, the first symptoms appeared in from one to five years following infection in 12 per cent.; from six to ten years, in 37 per cent.; from eleven to fifteen years, in 25 per cent.; from sixteen to twenty years, in 14 per cent. On the other hand, inquiry into the antecedent history of five thousand five hundred cases of widely varying disease in males, disclosed the remarkable fact that but 22.5 per cent. were syphilitic, and 77.5 per cent. not syphilitic. Other causes that were effective in conjunction with syphilis, but which, alone or associated, were of minor importance, were exposure to cold, inordinate muscular activity, sexual excesses, trauma and neuropathic tendency. It is thus demonstrated that in the vast majority of cases tabes is a sequel of syphilis, and that syphilis is by far the most important, the most common, and the most potent etiological factor in tabes.

TWO CASES OF ACROMEGALIA.

PEL (*Berliner klin. Wochenschr.*, 1891, No. 3) reports the case of a girl, twenty-five years old, who had been perfectly well prior to a fright resulting from a fall. Soon after the accident she complained of headache and sensitiveness of the eyes to light and wind. Some weeks later, there were otalgia and tinnitus aurium and sharp pains in the gums; then rheumatoid pains in the back, scapular region, and extremities, with paræsthesiæ, particularly at the tips of the fingers and toes. Headache was sometimes so severe as to induce vomiting. The symptoms were aggravated by the sudden death of a brother, and the free intervals became shorter in duration and fewer in number. In the course of a little while it was observed that the face, hands, and feet were gradually increasing in size. The mental condition was one of depression. There was muscular weakness. There were excessive thirst and profuse perspiration. The appetite was impaired, the bowels torpid. There was occasional vesical tenesmus. Menstruation, previously regular, was absent. There was loss of flesh. The body-length was five feet five inches, the body-weight one hundred and thirty-eight pounds. The appearance was anæmic; otherwise the nutrition seemed maintained. The large size and the shape of the head, as well as the large size of the hands and forearms, were striking. The enlargement of the hands and fingers was regular, so that no deformity was evident. The increase in size was due almost exclusively to hypertrophy of the bony parts. The shape of the face was changed, the lower jaw projecting forward. The occipito-mental diameter was nine and a half inches, the diameter twenty-seven inches. The nose was large and broad; the lips, especially the upper, were large and thick; the right malar bone was prominent; the forehead low. The enlargement of the lower extremities was not as great as that of the upper. The patellæ, the crests of the ilium, the clavicles, and the vertebræ were hypertrophied. The sense of smell was imperfectly developed.

LONG (*Lchigh Valley Med. Mag.*, 1891, No. 3) reports the case of a laborer, forty-eight years old, in whose history only the development of an abscess at either hip, at an interval of ten years, appeared of interest. There was long-existing constipation and transient headache. Enlargement of the hands had been noticed for seventeen years. The skin was of a dirty-yellowish color. The hands, feet, and face were disproportionately large; the face presented the characteristic elliptical contour, otherwise the head was normal in size and shape; the forehead receded from the prominent eyebrows; the nose was large and broad; the lower lip was thickened and everted; the malar bones were prominent; the lower jaw was massive, projecting forward; the tongue was large and broad; the neck was short and thick, and the head inclined forward, as the result of a cervico-dorsal kyphosis. In the hands and feet the hypertrophy involved the bones and the soft parts; the forearms and legs were also somewhat enlarged; the enlargement was the more pronounced upon the right side. The thorax was abnormally large. There was total blindness, with atrophy of both optic nerves. The body-length was five feet nine and a half inches; the body-weight two hundred and sixty-two and a half pounds; an increase of seventeen pounds in twelve years.

THE LESIONS FOUND IN A CASE OF SENSORIAL APHASIA WITH RIGHT HEMIOPIA.

DEGERINE (*L'Abeille Méd.*, 1891, No. 15) reported to the Société de Biologie the result of the necropsy in the case of a patient who had for several months presented complete verbal deafness and verbal blindness. Hearing was otherwise preserved. While vision was acute, there was a right hemiopia, for on moving an object from right to left before the eyes of the patient he did not perceive it until the middle line had been passed. There was complete agraphia so far as concerned spontaneous writing or writing under dictation (verbal deafness impairs this test), but the power to copy was fairly well preserved. The motor faculty of speech remained, but language was incoherent and paraphrasic. There was no trace of hemiplegia and no appreciable alteration of general sensibility. A few days before death, stupor, and finally coma, was manifested. There was found at the necropsy, on the external surface of the left cerebral hemisphere, a yellow patch, commencing in front of the posterior half of the inferior two-thirds of the ascending parietal convolution, leaving intact the fissure of Rolando. It involved the entire base of insertion of the parietal as well as the vertical *plis de passage* uniting that convolution to the superior parietal, following quite exactly the inter-parietal scissure. It likewise involved the entire inferior parietal convolution (supra-marginal gyrus and angular gyrus), extending into the posterior portion of the first and second temporal convolutions and the second occipital convolution. The centres for auditory and visual memory of words were thus destroyed. The softening extended through the subjacent white matter down to the ventricular walls, destroying the radiations of Gratiolet, and thus accounting for the right hemiopia. The frontal lobe was absolutely intact, and Broca's convolution examined microscopically did not give evidence of granular bodies.

Degerine calls attention specially to the paraphrasia which existed in this case, as demonstrating once more how necessary is the preservation of auditory images to the proper functioning of Broca's centre. The discrimination between paraphrasia and motor aphasia is important, and in this case enabled the integrity of Broca's convolution to be affirmed during life.

TREATMENT OF YELLOW FEVER BY COLD-AIR BATH.

GARCIA (*L'Abeille Méd.*, 1891, No. 16), according to a letter from the French consul at Santiago, Cuba, proposes to use the metallic casket as an *ante-mortem* apparatus, and in the treatment of yellow fever. His apparatus, which is open at one side, is made of zinc with double walls, 10 centimetres (4 inches) apart, the space being utilized for the reception of ice. It is 2 metres (say 6½ feet) long, and in section 1.10 metres (say 3½ feet) square. As soon as the disease is recognized the patient receives a laxative and is placed in the casket. The temperature of the enclosed air varies from 0° C. (32° F.) to 10° C. (50° F.). Garcia believes that the cold not only plays the part of an antithermic agent, but that it sterilizes the chamber and produces a "lavage of the blood." The external air on entering the casket is chilled, and its vapor is at once condensed; a part of the condensed moisture freezes

and is deposited on the zine. The other portion remains in suspension about the patient, and is rapidly absorbed by the cutaneous and mucous surfaces. Entering the blood it dilutes the soluble toxic products this fluid contains, and by increasing blood-pressure promotes their excretion by diuresis. Of twenty patients thus treated only two died.

Le Roy de Méricourt, who read the Consul's letter to the Academy of Medicine at Paris, refrained from any expression of opinion.

THE BRAINS OF TWO APHASICS AND ONE DEAF-MUTE.

LUYS (*L'Abeille Méd.*, 1891, No. 15) presented to the Biological Society of Paris the brain of a soldier of forty-eight years, who, after falling from his horse upon his head, exhibited left hemiplegia without disturbance of sensibility. Speech being impossible, he wrote with the right hand intelligent responses to questions. He used that hand habitually for all purposes, and had never been left-handed.

At the necropsy there was found a notable difference in weight between the two cerebral hemispheres. The right weighed 220 grammes and the left 287 grammes. The left hemisphere was well formed and showed no lesion. The right hemisphere exhibited a great loss of substance, principally in the region of the insula. The gray matter was replaced by a yellowish areolar tissue. The area of destruction was not arrested here, but extended somewhat like an enlargement and prolongation of the parallel fissure. The base of implantation of the third frontal convolution was interrupted at the level of the ascending frontal. Nevertheless the frontal and parietal convolutions remained intact. The first temporal convolution was destroyed throughout its entire extent. The inner surface of the right lobe did not, from a morphological standpoint, show any appreciable lesion. The thalamus was slightly atrophied. The corpus striatum was not laid open, but the depth of the lesion which had practically removed the insula permitted it to be determined that the extra-ventricular portion was notably atrophied. This observation seems to show that the speech faculty is not exclusively located in the left hemisphere and the third frontal convolution. Luys queries whether aphasia of traumatic origin has a different evolution from aphasia of "spontaneous" origin.

The same author exhibited the brain of an idiot girl, aged five years, whose death had been due to acute pulmonary disease. The child had been of medium stature; she had never given any sign of intelligence; she was docile, appeared to hear what was said to her, but was completely incapable of speech. The brain was large, and the convolutions presented very few folds. The right lobe showed no morphologic deformity. The right third frontal convolution was normal; the left third frontal was characteristically malformed; instead of branching, like its fellow, from the base of the ascending frontal, it branched from above like a division of the second frontal. This conformation, with absence of speech, is new evidence in favor of Broca's theory.

A third brain shown by Luys was that of a female deaf-mute, aged twenty-two years. The left third frontal convolution was completely atrophied, being reduced to a curvilinear fold. Its point of insertion upon the base of

the ascending frontal was interrupted, and at that point replaced by an irradiating prolongation, like a bifurcation of the second frontal, which had taken on exuberant development. The right third frontal followed the normal configuration.

THE ETIOLOGY OF EPILEPSY.

WALTON and CARTER (*Boston Medical and Surgical Journal*, 1891, No. 19, p. 485) have made a study of the connection between epilepsy and infantile convulsions. By careful scrutiny and elimination of doubtful cases, they were able among two thousand five hundred and thirty-nine cases of all kinds applying at the neurological department of the Massachusetts General Hospital, to isolate one hundred and thirty-three cases of epilepsy—5.25 per cent. In time of onset, they were divided as follows: From birth to five years, twenty cases (15 per cent.); from six to ten years, eighteen cases (13.5 per cent.); from eleven to fifteen years, twenty cases (15 per cent.); from sixteen to twenty years, nineteen cases (14.33 per cent.); from twenty-one to thirty years, thirty-five cases (26.33 per cent.); from thirty-one to forty years, twelve cases (9 per cent.); from forty-one to fifty years, three cases (2.25 per cent.); from fifty-one to sixty-five years, four cases (3 per cent.); unknown, two cases (1.5 per cent.). Of seventy successive cases of pure epilepsy in hospital and in private practice, in which careful inquiry was made as to the occurrence of convulsions in infancy, both in the patient and in brothers and sisters, nine commenced in infancy and became continuous, fifty-six presented no history of convulsions in childhood, and five only presented a history of convulsions in infancy followed by a period marked by an absence of convulsions. It was found that among the brothers and sisters of epileptics, convulsions in infancy were more common than among the epileptics themselves. Of one thousand children consecutively taken at random from society, Walton and Carter elicited a history of convulsions in infancy in one hundred and eleven. It has been estimated that there are about six epileptics in every thousand of population; as convulsions in infancy are observed in one of fourteen cases (five in seventy) of epilepsy, the two affections occur coincidentally once in not less than 2000 individuals; and as convulsions in infancy are observed in 222 of every 2000 (111 in 1000) individuals, the chance that a child presenting convulsions in infancy will develop epilepsy later in life is 1 in 222. The conclusion to be arrived at is that epileptics are at least not more likely than others to have had convulsions in infancy, and that, conversely, a child that has had convulsions in infancy is not more liable than any other to develop epilepsy later in life, after a period marked by freedom from attacks has removed the case from the class of epileptics in which the convulsions begin in infancy and become continuous.

TONSILLITIS; PERICARDITIS WITH EFFUSION; PUNCTURE.

SHATTUCK (*Boston Medical and Surgical Journal*, 1891, No. 19, p. 491) has reported the case of a woman, twenty-four years old, who was seized with tonsillitis, and subsequently developed pain and swelling in several joints, with feverishness, pain in the præcordium, and dry cough. On examination

the area of cardiac percussion-dulness was found to be enlarged and a pericardial friction-sound was heard near the apex and on the aortic area. In the further progress of the case the condition became so critical that by means of a trocar and canula plunged into the fifth intercostal space on the right, three inches from the median line, about an ounce of bloody, serous fluid was removed. An endeavor to aspirate in the fourth intercostal space on the right, two and a half inches from the median line, was unsuccessful. As a few days later the symptoms were not relieved, the trocar was introduced into the fifth intercostal space on the left, four and a half inches from the median line, and a half-ounce of serum withdrawn. On the following day the trocar was introduced into the fifth interspace, on the left, at the anterior axillary line, six and a quarter inches from the median line, but no fluid was obtained. Ultimately, despite the occurrence of the pulsus paradoxus and of delirium, and the development of friction-sounds on both sides of the chest, the patient slowly improved; a systolic murmur, heard at the apex, however, persisting. As convalescence was about to set in, it was noticed that not only was the action of the heart abnormally frequent, but also that the thyroid gland was enlarged and that there was well-marked tremor, although the eyeballs were not prominent.

SURGERY.

UNDER THE CHARGE OF

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CASE OF COMBINED PYLORECTOMY AND GASTRO-ENTEROSTOMY FOR CARCINOMA OF THE PYLORUS; RECOVERY.

JESSETT reports (*Lancet*, London, vol. ii., No. 17, 1891) the following case: Female, aged thirty-eight, married, complaining of vomiting more or less frequent for some months, accompanied with localized pain and general weakness. The bowels were constipated. A tumor connected with the pylorus was easily made out. The diagnosis of obstruction of the pylorus, probably of a malignant nature, was made, and operation advised.

The patient consenting, the operation was done as follows: An incision three inches in length was made in the middle line from the umbilicus upward. The tumor was easily seized and brought out through the wound.

There were no adhesions. The growth was found to extend four or five inches along the walls of the stomach. Using an aneurism-needle armed with chromicized gut, the vessels running along the greater and lesser curvatures of the stomach were ligatured. With a pair of ligament forceps the stomach on the duodenal side of the proposed section was clamped. The assistant holding the stomach, it was then cut through. All bleeding vessels were secured with catgut. A quantity of fluid in the stomach was siphoned off and the edges of the wound in the stomach brought together by means of a continuous chromicized-gut suture passing through all the coats. Quilt sutures of the same material were then passed through the serous and muscular coats. The duodenum was next divided between forceps and an elastic ligature. The divided end of the duodenum was sutured exactly as in the case of the stomach, and the rubber ligature removed. Gastro-enterostomy was now performed. An incision an inch and a half long was made in the stomach parallel with, and about an inch from the greater curvature, and two inches from the divided end. A Senn decalcified bone plate threaded with two lateral chromicized-gut ligatures, and two longitudinal No. 1 silk ligatures, was introduced. The lateral ligatures were passed through all the coats of the stomach about an eighth of an inch from the incision. A loop of the jejunum, close to its origin, was caught, and after passing an elastic ligature above and below, a similar bone plate was introduced in the convex surface of the intestine in the same manner as in the stomach. The two plates being now held in accurate apposition by an assistant, the corresponding ligatures were tied. Five quilt sutures were introduced along the upper edges and ends of the plates. All having been cleansed, the abdominal wound was closed with silkworm-gut sutures. The patient bore the operation well. The portion of stomach and pylorus removed measured six inches in length. Brandy and beef-tea enemata were ordered, and tepid water in tablespoonful doses if a desire was expressed for anything by the mouth. Food by the mouth was gradually resorted to as the condition warranted. On the sixteenth day the silk ligature loops and part of the gut ligatures were passed *per rectum*. On the nineteenth day the patient was exhibited to the Clinical Society. At the time of writing she had gained twenty and one-half pounds.

NON-MALIGNANT TUMORS OF THE BREAST AND THEIR TREATMENT.

JACOB, translated by Cumston (*Dublin Journ. Med. Sci.*, 3d ser., No. 240), after a review of the subject, reports six cases of non-malignant tumor of the female breast. The author emphasizes (1) the relations of chronic mastitis to fibromata and to cysts of the breast, and (2) the pain in fibromata.

Of the non-malignant tumors of the female breast, fibromata are the most common. Eighteen of thirty-four cases collected by Labbé and Coyne were pure fibromata; three were cysts, by retention of products produced by connective hyperplasia; eight were sarcomata, four of which had fibromata for the starting-point. Fibromata develop during the sexual period—that is, between the ages of twenty and forty years.

It is stated that if these patients are questioned about the condition of their breasts during menstruation they will be found to experience increased ten-

sion in the gland, with redness, heat, swelling, and pain, indicating a congestion or even an inflammation of the organ—a veritable menstruation mastitis. Frequent repetitions of this process favor connective-tissue proliferation, and finally a fibroma results. This same process, by compressing the excretory ducts and making traction on the acini, may form cysts.

In the surgical treatment of these tumors enucleation is to be performed, if possible; if this cannot be done then a partial amputation is advised, after the method of Tripier. An incision is made from the periphery of the organ toward the nipple, stopping short of the areola. A triangular piece of the gland, including the tumor, is removed, having the base at the periphery. The gland is sutured with catgut and the wound is then closed with superficial sutures. The object of the deep sutures is to preserve the shape of the breast.

The article concludes with the following *résumé*: Chronic inflammation of the breast, developing under the influence of menstruation or the puerperal condition, may end in fibroma or multiple cysts. Traumatism, by producing localized mastitis, can thus produce fibroma or solitary cysts *à fortiori* when the preceding causes exist. The affection, if taken at the outset, can be greatly improved and even cured by a local and general medical treatment applied both at the same time. If it remains without effect, surgical treatment is necessary—by enucleation, if it be possible, but more frequently partial amputation of the breast. Prof. L. Tripier has improved the procedure by employing in every case two drainage systems and two planes of sutures—a submammary drainage and deep suture of the gland, a subcutaneous drainage and a superficial or cutaneous suture. This method gives excellent results as to the shape of the breast—all the more so as in certain cases it is easy to hide the line of incision either in the submammary fold, or in the line of junction of the areola with the skin.

COMPLETE PRIMARY UNION FOLLOWING SUPRA-PUBIC CYSTOTOMY.

ALBARRAN (*Annales des Maladies des Organes Génito-urinaires*, 9e année, tom. ix., No. 12) gives the following method of operation with the above result in two cases of vesical tumor: He made a longitudinal incision with the patient in the Trendelenburg position; the tumor was removed by free incisions extending well into sound tissues, and bleeding was controlled by six catgut sutures, used to make exact approximation of the edges of the wound. Free vesical drainage was secured by passing the catheter of De Pezzer from the bladder outward through the urethra, its trumpet-shaped proximal extremity resting close upon the orifice of the urethra and its shape preventing all danger of displacement. It is to be frequently washed out with boric solution, and can be removed on the third to ninth day. The vesical and abdominal wounds were closed by four series of sutures: the first of catgut through the mucous membrane; and above this a Lembert suture of silk; while the abdominal walls were sutured by a deep catgut and a superficial silkworm-gut suture, a small drain being introduced into the pre-vesical space at the lower angle of the wound, to be withdrawn in twenty-four hours, and a suture being left *in situ*, to be tied after the removal of the drain. The patients in these two cases recovered completely in ten and

eleven days, one being seen in perfect condition seven months afterward, although they were fifty-two and seventy-three years of age respectively, and one so exhausted that preparations had been made for transfusion. Perfect drainage and arrest of hemorrhage are indispensable.

[The contra-indications to suturing of the bladder are very strong in many cases of tumors and of calculus. It is almost certain that it should not be employed when the following conditions are present, as occasional successes do not compensate for the increased risk of extravasation and pelvic cellulitis: 1. When the tumor or calculus is large and its removal involves much instrumentation. 2. When the bladder is already injected with pus microbes, as shown by the ammoniacal and purulent urine. 3. When the bladder is found to be hypertrophied or very irritable. 4. Where there is likely to be consecutive hemorrhage into the bladder.

In cystotomies in patients with small stones and with acid normal urine, vesical sutures are of great advantage. In cases of tumors of recent development, not yet followed by much cystitis, they are likewise useful. In cases of rupture of the bladder they are clearly indicated. In other cases the risks of their use should be carefully weighed before they are employed.—J. W. W.]

THE NATURE AND RESULTS OF DIFFERENT METHODS OF WOUND-TREATMENT, ESPECIALLY WITH REFERENCE TO LAPAROTOMIES.

KÜSTER (*Centralblatt für Chirurgie*, 1891, No. 48), speaking of the principles of anti- and aseptic treatments, holds the latter to be the true ideal of the surgeon, yet thinks due weight must be given to the opposing circumstances which are found in practice. There must be modifications to accord with the wishes and position of each surgeon, and the application of either principle must be varied according to conditions. In case of the lack of proper material, so often found, especially in general practice and war practice, the use of antiseptic solutions becomes imperative; and no matter who the surgeon, there are infected cases, and cases, as of mouth, genital, and intestinal wounds, where it is impossible to be aseptic, and therefore antiseptics must be used. He therefore teaches and illustrates the laws of both methods in his clinic, and advises that this be done generally. Especially in laparotomies he finds asepsis to be gradually displacing antiseptics, and in 60 cases saw but 8 deaths in twenty-one months' service in his clinic. Three of these only were septic wounds, with 2 from sublimate poisoning, 1 from sarcoma of the meso-colon, 1 an echinococcus in the pelvic fascia of a young girl, and 1 a choledochotomy.

TWO CASES OF INTESTINAL RUPTURE HEALED AFTER LAPAROTOMY.

JAHODA (*Wiener klin. Wochenschrift*, Jahr. iv., No. 45), in two cases of intestinal rupture caused by contusion and without external wound, gives the following descriptions and conclusions:

Case I.: Laparotomy performed eighty hours after accident. About six quarts of fluid were found in the abdomen, foul and filled with coagula; the entire small intestine was covered by a fibrinous suppurating exudate; the serous surfaces were inflamed, and on the side opposite to the mesentery

a rounded opening about half an inch in diameter was found. This was closed by a Lembert suture, at right angles to the longitudinal axis of the intestine. The abdomen was washed out with a 1 : 1000 salicylic acid solution, and dried thoroughly with aseptic gauze. The abdominal wound was closed by three series of sutures without drainage, and an iodoform dressing applied. Two days later there was a discharge of foul fluid from the lower angle of the wound, but the patient recovered, and was seen five weeks after dismissal in good health.

Case II.: Laparotomy twenty-five hours after the accident, with same treatment and recovery.

He concludes that laparotomy as early as possible is the proper treatment in such cases, but that these two cases show that even after eighty hours an operation may save the patient; that the preferable incision is through the linea alba, and of sufficient length to make exploration easy; and that adhesions are to be broken up and fibrin removed with aseptic gauze during irrigation with a salicylate solution.

IMMEDIATE SUTURE OF THE RUPTURED URETHRA.

BARLING (*Birmingham Medical Review*, vol. xxx., No. 160) reports four cases, and draws the conclusions that follow:

Case I.: The patient died on the twentieth day from suppuration and pneumonia, after a severe railroad crush of the pelvis. The urethral wound was found ununited, although four stiches had been inserted, and up to the ninth day little urine had escaped by the perineal wound, and a catheter could be passed with little difficulty.

Case II.: A boy, aged nine years, fell astride a paling; there was an oblique tear, anterior to the membranous portion of the urethra; one stich only could be inserted. The wound healed rapidly, and since the patient is catheterized twice weekly, only a slight irregularity is felt four inches from the meatus.

Case III.: A boy, aged ten years, fell astride a rail; the urethra was ruptured in the membranous portion. Two sutures were introduced but the urethra failed to unite; it healed by granulations about a catheter; and the patient has a very irregular deep urethra, that demands the passage of a No. 7-10 bougie to keep it from speedily contracting.

Case IV.: The patient, a man, aged twenty-seven years, fell on the handle of a barrow, rupturing the posterior portion of the membranous urethra; the case was complicated by the existence of two strictures of the urethra requiring preliminary internal urethrotomy. The tear was at the very apex of the prostate, and owing to the depth of the wound could not be sewed, and was treated by the usual way of tying in a catheter. Patient died of a pyelo-nephritis due to the presence of the catheter.

Barling believes that immediate perineal section is called for in all these cases to prevent extravasation of urine, and that suturing the urethra should be attempted, with the hope of obtaining primary union. A supra-pubic drain is introduced, to prevent the wound from being bathed by the urine that must escape alongside of a catheter, and which he believes prevents primary union. He formulates the details of the operative procedure.

[Kaufmann, of Zurich, has shown by successful experiments on dogs, and Erasme, Bryson, the writer, and others, by actual operations, that immediate suture of the urethra, in cases of rupture, is practicable and useful. Erasme sutures over a large catheter, using catgut stitches, not including the mucous membrane. Kaufmann placed his first row of stitches in the mucous membrane, tying them within the canal.

The operation would certainly seem to meet all the indications in a case of rupture. The value of the supra-pubic drain seems more than doubtful. It cannot possibly prevent all the urine from passing by the urethra, and it adds a complication to cases already sufficiently serious.—J. W. W.]

ANTISEPTIC PRECAUTIONS TO BE USED BEFORE OPERATIONS ON THE GENITO-URINARY REGION.

M. LARAUX (*La Chirurgie Contemporaine des Organes Génito-urinaires*, November, 1891) gives the following as the best method of observing antiseptics in these operations: For metallic instruments he considers the best procedure to be boiling for half an hour in a 5 per cent. carbolic acid solution, and then keeping in tightly closed aseptic boxes. Just before the operation they are to be washed with a 1 : 1000 sublimate solution, and then placed in a saturated boiled solution of boric acid, and, in general, all instruments should be placed in this solution before their introduction into the urethra. Nélaton's sounds, made of red rubber, may also be dipped in these solutions without doing them harm. Soft rubber instruments are to be washed out with 70 per cent. alcohol, afterward to be washed in 1 : 1500 sublimate solution, and finally boiled for twenty minutes in water. Before introducing the instruments, he dips them in 5 per cent. borated vaseline. The hands of the operator and the parts to be operated upon must be made aseptic, and then the genito-urinary tract itself, for if it is not aseptic all other precautions are useless; this he accomplishes by the use of a boiled saturated solution of boric acid injected into the urethra and bladder, without the use of the catheter; if this solution produces pain, cocaine may be added to it. When the bladder is infected, a certain amount of the antiseptic solution should be allowed to remain in it.

[An even more important method in the disinfection of the urinary tract consists in the administration of salol or boric acid by the mouth. It has been conclusively shown that by their effect upon the urine, which they sterilize or render antiseptic, these agents are potent in preventing many forms of infection.—J. W. W.]

TUBERCULOUS DISEASE OF THE BREASTS.

MANDRY (*Centralblatt für Chirurgie*, 1891, No. 45) gives a summary of tuberculous disease of the mamma, made up from seven observations in the Tübingen Klinik, together with a thorough critical study of the literature of this subject, based solely on unquestionable cases. He finds only 21 out of 40 cases that stand the test of his criticism, and not even in all of these was the histological ground for diagnosis found sufficient.

CYSTS OF THE SPERMATIC CORD AND THEIR TREATMENT.

GROSS (*La Semaine Médicale*, 11e année, No. 50) considers these cysts of the cord to comprise *solely* the spermatic and the peritoneo-funicular varieties. He mentions as cases of these cysts having no connection with the testicle or epididymis one cited by Liégarde and another by Terrillon, but gives to Hochencgg the credit of first systematically describing these cysts, which, according to the latter, originate on the posterior superior part of the epididymis and the first part of the efferent canal. The majority of the cysts of the cord are funicular encysted hydroceles developed in the unobliterated portions of the vaginal process of the peritoneum, and do not differ in character from a localized serous peritoneo-vaginitis, except in the fact that the communication with the peritoneum has been obliterated. In a case which he reports, the tumor disappeared when the patient remained in bed three days, and reappeared on rising after some length of time. This case, on operation, proved to be an encysted communicating and intermittent funicular hydrocele connected by a filiform canal with the peritoneal cavity. This proof of the nature of these cysts leads him to believe that extirpation and not injection of irritants is the proper treatment, and also that the knowledge that these cysts may be spermatic should preclude other treatment. He considers it wise to open the sac immediately rather than to try to enucleate it in its entirety, to damage the cord, and he also advises firm pressure after the operation, and scrupulous antiseptic precautions during its performance.



AN OPERATIVE TREATMENT FOR DILATATION OF THE STOMACH.

BIRCHER (*Correspondenzblatt für Schweizer Aerzte*, Jahr. xxi., No. 23), in describing his operation for dilatation of the stomach, distinguishes two varieties, and says that it is more applicable to atrophic dilatation than to hypertrophic, illustrating his method by the following cases:

Case I.: Woman, aged forty-nine years, servant, ill for five years, admitted to the medical wards three times within a year; dismissed cured of symptoms, only to have them return. Finally, after admission to the surgical wards, an operation was performed: An incision was made parallel with the border of the left ribs 15 cm. long, the stomach drawn out, a fold made into it large enough to reduce it to normal size, the greater curvature being sutured nearly on a line with the lesser. The fold was sewed throughout its entire length with silk sutures, the fold hanging within the stomach from its upper inner surface throughout its entire length, thus reducing the size of the stomach by raising its lower border and making it possible for it entirely to empty itself, thus removing the mechanical pressure which before prevented a complete cure. The patient recovered rapidly, got up from bed on the tenth day, and remained in good health for nearly three months—when, after many indiscretions, the catarrhal symptoms were renewed, and a pyloric tumor was diagnosed, a thickening having been felt at the first operation. On the eighty-third day a second laparotomy was performed and the pylorus excised. At this time small but strong connective-tissue bands were found to have covered the silk sutures of the former operation, but the two serous surfaces were only slightly adherent.

The death of the patient, from escape of bile into the peritoneal cavity, gave an opportunity for examination which showed that "the dilatation was perfectly cured in its anatomical and physiological aspects by the operation."

Case II.: Woman, aged sixty years, ill for fifteen years. Differed from Case I. only in that there was lengthening of the stomach, and the fold was made at right angles to its longitudinal axis. The case progressed favorably, and was dismissed in thirty-three days, with no return of symptoms after thirty months.

Case III. was a severe case with general catarrhal symptoms, but was cured by this operation, and the general catarrh by a Carlsbad treatment.

Case IV.: The symptoms were intermittent; this was found to be caused by a fibrous band that constricted the pyloric end of the stomach when very full and prevented the expulsion of ingesta. It was cured by the cutting of the band, which simply exerted a mechanical pressure and was not connected with the stomach.

Bircher believes the operation to be harmless and effective because it puts the stomach in a mechanical condition to be cured by other treatment of its dyspeptic symptoms, and that it should be employed where the ordinary cure is followed by relapse after cessation of treatment. He believes silk sutures should be used, as there is not sufficient adhesion between the serous surfaces before catgut sutures would have been absorbed.

THE DISINFECTION AND STERILIZATION OF SURGICAL INSTRUMENTS.

In an exhaustive article (*Archives de Méd. et Pharm. Militaires*, tome xviii., No. 12) MALJEAU arrives at the following conclusions:

The best method of destroying pyogenic and infecting germs, whose resistance is increased when enveloped in a dried albuminoid, as blood or pus, is to boil all metallic instruments for twenty minutes in a solution of the carbonate or the crystallized soda, 1 per cent. being as efficient as a stronger solution, as it acts not as a germicide but as a dissolvent of the dried albuminoids, and allows the heat to act upon the spores. The cleaning of the instruments with soap and brush is not to be discontinued, but they are to be cleaned before being boiled; and as an efficient method of preventing the drying upon instruments of pus and blood, he advises the placing of them, immediately after use, in a warm solution of soda that has been previously boiled for ten minutes. For instruments not entirely metallic, as knives, he advises the dipping of the blades in a boiling 5 per cent. carbolic solution for five minutes, the whole instrument to be placed in a cold solution for fifteen minutes. He found that the spores of vibrio septicæmiæ and tetanus bacillus, when covered by dried albuminoids, were unaffected by remaining in a 5 per cent. solution of carbolic acid for five days, and that at the end of four days they were living in a neutral 1 : 1000 sublimate solution, and concludes that there is no practical antiseptic capable of destroying germs in a sufficiently short time without the addition of heat.

[It may fairly be said that this method of boiling in soda solution is that preferred and employed by the great majority of surgeons at the present day, because of its convenience and certainty of action. If, however, for any reason it is not possible to employ it, immersion of the instruments for twenty

minutes in a 1 : 20 carbolic solution, or for a much shorter time in a 1 : 1000 sublimate solution, will render them aseptic in the great majority of cases.— J. W. W.]

THE TREATMENT OF PELVIC SUPPURATION BY THE SACRAL AND PARASACRAL METHODS.

SAXTORPH (*Centralbl. f. Chir.*, 1891, No. 51), writing on the best method of treatment of suppuration in the pelvis, comes to the following conclusions:

1. The parasacral method gives free and easy access to the pelvic cavity and makes effective drainage possible.

2. This method permits of a local and radical treatment of the pelvic suppuration and extravasation, either sub-peritoneal or intra-peritoneal. In those cases in which the disease starts from the bone, high on the posterior pelvic wall, the sacral method of operation may become necessary. In all other cases of pelvic accumulations the object can be obtained by a simple parasacral operation, which only requires incision through soft parts.

3. The incision is simple and without danger, and does not endanger large vessels or nerves. The wound heals quickly and does not leave any impairment of function.

4. The parasacral operation must, therefore, be considered as the operation of selection in cases of suppuration or extravasation in the true pelvis.

ON THE TREATMENT OF TRAUMATIC ANEURISMS: WITH THE REPORT OF A CASE CURED, INVOLVING THE RIGHT COMMON CAROTID ARTERY.

MATLAKOWSKI (*Annals of Surgery*, vol. xiv., No. 6) relates an interesting case of traumatic aneurism, and studies the subject very carefully.

Case: Female, aged forty-one years; had noted two years previously that the right half of her neck was rather thicker than the other half, and that below the angle of the jaw she could feel a tumor as large as a plum, which gradually enlarged in size. On account of the constant growth and frequent nausea, she consulted a doctor, who drew off fifteen syringefuls of a transparent light-yellow fluid, and then injected into the cavity a 10 per cent. solution of zinc chloride.

On the eighth day after the puncture the patient felt a violent tearing pain and pulsation in the neck, and a much larger tumor was present than before. A doctor was called, who punctured the tumor, and instantly blood gushed out, so that the wound had to be sutured and dressed with hæmostatic cotton. The tumor rapidly enlarged; there was a sense of tearing and bursting of the neck, with retraction of the tongue and piercing pain in the right half of the head and nape of the neck. The head was turned with the face to the left, and slightly bent downward. The whole right side of the neck was occupied by a very prominent tumor along the sterno-mastoid muscle, from the mastoid process nearly to the clavicle. Pulsation could be seen and felt, and a bruit heard.

It seemed probable that the patient had at first some kind of a cyst (not congenital) near the carotid artery, and that the irritating fluid injected might have caused the rupture of the wall of the artery.

The diagnosis of traumatic aneurism having been made, it was decided to

cut down on the sac and tie the vessel. Ligature of the common carotid had become impossible on account of the spreading of aneurism to the clavicle.

Accordingly a bold incision was made in the tumor, and the finger introduced to control the vessel. The cavity was cleansed and sponged, when the common carotid was plainly seen traversing the posterior wall. Above, the bifurcation was seen, and the cause of hemorrhage demonstrated to be due to the sundering of the external carotid from the common trunk. In the region of the bifurcation a smooth membrane was noticed resembling the wall of a sebaceous cyst. This was probably the cyst into which the hemorrhage took place. The common carotid was ligatured just below the lesion, as well as the external and internal branches just above the bifurcation, and two smaller branches. The wound was then drained and dressed. On recovering consciousness the patient declared herself free from her former pains. The internal jugular vein was not seen.

On the following day the entire left half of the body was found to be paralyzed. The intelligence was impaired; she did not know she was paralyzed, and took little interest in her surroundings. She answered questions reasonably enough; drank willingly. Sensation gradually returned in the paralyzed side, and finally motion, and by the sixth week she could walk with assistance. At the time of leaving the hospital the patient could, with some difficulty, walk alone and was able to move the upper extremity fairly well.

In this case the left hemiplegia is worthy of note. As it came on in the night, nothing is known about the condition of the patient at the time or before. This accident is said by Lefort to occur in above one-fourth the cases operated upon, and about one-fifth of such cases die of cerebral disturbances. The mortality after ligature is put down as above 43 per cent.

The mode of origin of this aneurism is interesting. Matlakowski thinks that there is no doubt that the patient had a cyst contiguous to the vessel, and that the action of the chloride of zinc upon its walls caused the hemorrhage.

Seven other cases of traumatic aneurism of the carotid are tabulated, with six recoveries.

[This would certainly be a very exceptional occurrence as a result of the application of a 10 per cent. solution of zinc chloride, which usually produces only a superficial albuminous coagulum, and does not affect the more resisting structures, such as the walls of vessels. It seems more probable that some direct injury to the vessel resulted from the first puncture.—J. W. W.]

LAPAROTOMY FOR HYDATID CYSTS OF THE LIVER.

MAYNARD (*Languedoc Médical*, 1891, No. 6) refers to a case of hydatid cysts of the liver treated by laparotomy, followed by recovery, which was published in that journal November 27, 1891, and reviews the different methods of treatment. He advises in all cases incision and excision of the cysts by laparotomy. The chief objection to this operation is the possibility of a fistula remaining. This does not diminish the value of the operation, however, and is of little importance compared with the gravity of the affection.

In the case above referred to, tapping was performed without success. In tapping it is scarcely probable that all the cysts will be reached, and the method of Récamier, followed with repeated injections, has not been successful.

The author has given up lateral laparotomy on account of adhesions at the seat of punctures, which have usually been made before the case is subjected to operation, as well as for the reason that at times the tumor is equally developed on the right and left sides; the median incision is, therefore, recommended. All the vesicles are to be removed and the cavity flushed out. It is advised to use astringent lotions to the seat of operation, which decrease the biliary oozing and filtration from the wounds. In the cases observed by the author the digestive functions were unimpaired and nutrition maintained.

The article closes with the statement that laparotomy is the only practical method for treating hydatid cysts of the liver.

HERNIA OF THE CÆCUM ON THE LEFT SIDE.

BROCA reports (*Bull. de la Soc. Anat. de Paris*, 5me sér, tome vi.) the following case which he had the opportunity of dissecting. The subject was an old man. On the left half of the scrotum was seen an enormous hernia, the scrotum on this side measuring thirty centimetres in length. The mass was resonant. On the right side was also a scrotal distention, but the tumor was not larger than the fist.

After a long incision through the skin and dartos on the left side, the sac was easily isolated above, but not below. The testicle was situated at the lower part, at the posterior external face. The sac was incised throughout its entire length in front. At the junction of the middle and lower thirds was a fold perpendicular to the long axis. This fold was formed by the serous membrane. The condition at first suggested a congenital hernia.

The hernia was direct and free from the cord; the epigastric vessel external to its neck. The cord adhered below to the sac, but above was free. The vaginal tunic was nearly obliterated.

The contents of the hernia were very complex. First, there were two metres and ten centimetres of small intestine with its mesentery. At the lower part of the sac the intestine was adherent. The cæcum rested on the fold mentioned. Above were fifteen centimetres of ascending colon.

On the right side the hernia was direct, and situated under the atrophied cremaster, but free from the cord.

The bladder was not displaced. An interesting feature was the reduplication of the serous membrane in the left sac, forming a diaphragm or valve-like structure on which the cæcum rested. The hernia was certainly acquired, because it was extra-funicular, and was surrounded by the fascia transversalis.

THE ORIGIN OF CERTAIN CASES OF CYSTITIS ATTRIBUTED TO COLD, RHEUMATISM, OR GOUT.

BAZY (*Ann. des Mal. des Org. Génito-urin.*, 1891, Bd. ix., No. 8) speaking of the etiology of cystitis, believes there are cases attributed to cold, or to a rheumatic or gouty diathesis, which cannot be thus explained.

The frequent and painful micturition observed may be due to glycosuria. In other cases, owing to some irritating cause, it is an exacerbation of a former attack, which had not entirely disappeared.

There are a good many cases, however, in which the trouble is of infectious origin, and can be attributed to processes of suppuration, as from a gumboil or a purulent tonsillitis, from which the patient may have been suffering. The author cites cases which seemed to belong to this class. This form of infectious cystitis, by its rapid recovery, is distinguished from gonorrhœal cystitis, or that caused by an infected catheter.

POLYPUS OF THE MALE URETHRA.

GOLDENBERG relates (*New York Medical Record*, vol. xl., No. 20) the history of a patient whom he relieved of a polypus of the urethra. The patient was thirty-six years of age, had a number of attacks of gonorrhœa, and two years ago noticed for the first time slight pain during micturition. This gradually grew worse, and excesses in alcohol or venery were followed by exacerbation of the pain. Later, pain during cohabitation developed, and frequent painful pollutions appeared, as well as headache, nervousness, and a continual desire to urinate, which act was performed slowly and with some difficulty. There was also a urethral discharge.

From the appearance of the discharge and the history of extra-matrimonial intercourse, infection was suspected, and permanganate of potassium injection (1 : 1000) was ordered. On passing a sound, resistance was met with in the posterior urethra. Ocular examination with the endoscope revealed a few granulations in the bulbous region. The posterior urethra was with difficulty brought into view, and at this point a mass of polyps was seen growing from the membranous portion and attached by a broad pedicle.

An attempt at removal by the "endoscope carunculotome" being unsuccessful, the growth was partially removed by an ordinary urethral polypus forceps. The operation was completed by Oberlinder's "tampon écrasement" and the base touched by a 20 per cent. solution of nitrate of silver.

Four months after, the patient remained well and free from pain and discharge.

RESULTS OF TREATMENT OF FUNGOUS INFLAMMATION OF THE WRIST-JOINT BY MASSAGE COMPARED WITH THE RESULTS BY RESECTION.

NIEHANS (*Centralb. f. Chir.*, 1891, No. 50) reports thirteen cases of fungous arthritis of the wrist-joint, of which twelve were treated by massage and one by resection. The functional results of the twelve cases were generally very good, and the local trouble in most of the cases was cured. In seven cases, with repeated formation of abscesses and fistulæ, the local disease never recurred, although in other portions of the body there were repeated abscess-formations which usually became chronic, and in one case resulted in death after seven years. The functional results in the case treated by resection did not satisfy the author, but eight years after the operation the case was found entirely cured, so that the final result (especially as the patient was aged thirty-three years at the time of the operation) did not leave anything to be desired. [In circumscribed abscess-formation massage would be valueless,

because: 1st. The process in this state, when the individual is young and healthy, tends to spontaneously cure. Evacuation of the pus, and partial resection, may hasten the cure. 2d. Generalization or metastasis of the disease, when the case is treated by massage, is the more to be feared, for it is observed when the parts are allowed to remain quiet. The results of resection are not so unsatisfactory, especially in the light of the improvement in the technique in the operation by the ulnar incision introduced by Kocher, which does not interfere with the radial epiphysis. It is natural that in young, healthy individuals, a more conservative treatment should be adopted than in older persons, in whom the prognosis in tuberculosis of the joints is less favorable.—J. W. W.]

OTOLOGY.

UNDER THE CHARGE OF

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INJURY TO THE EAR FROM A PIECE OF WOOD.

DR. F. L. JACK gives the history of a little boy, five years old, who while at play fell, and in some unknown way ran a splinter of wood, the size of half a match, into his auditory canal and through the membrana flaccida. The accident happened three months before the boy was seen by Dr. Jack. Pain and otorrhœa had continued ever since, and since five weeks after the accident, pus had flowed from a spontaneous opening at the tip of the mastoid. A few days later facial paralysis was noted. Under ether a foreign body was detected by the probe, and it was pulled out with a hook. The otorrhœa soon ceased, as did the purulent discharge from the mastoid. The membrana tympani appeared cicatrized. Hearing for watch twenty inches. There had been great impairment of hearing. Dr. Walton reported "pretty nearly complete facial paralysis with degeneration-reaction." (*Boston Medical and Surgical Journal*, vol. cxxiv., No. 21.)

A CASE OF ABSCESS AND SOFTENING OF THE BRAIN, ASSOCIATED WITH CHRONIC DISEASE OF THE TYMPANUM.

DR. J. ORNE GREEN gives an account of a case of the above diseases, occurring in a woman thirty years old (*Boston Medical and Surgical Journal*, vol. cxxiv., No. 21). Six or seven years previously the woman had received a blow behind the right ear, followed within a week by discharge from the ear. Since then she had had occasional pain, with renewed discharge, lasting for a week or two and then ceasing for some months. For five years, in rising suddenly, and in going down stairs, has been dizzy, followed occasionally by vomiting.

The autopsy revealed an abscess about the size of an English walnut in the right temporo-sphenoidal lobe, its outer wall of brain-substance being only one-eighth of an inch thick. She had had pain over the right side of head, over region of this abscess. There was no sign of transmission of purulent disease from the drum-cavity to the brain.

Dr. Green says that in this case localized pain would have been a good guide for opening the brain abscess. He calls attention to Körner's statistics regarding this symptom. After an analysis of one hundred cases of otitic brain abscesses, he says, in speaking of pain, that it is of little value for localization. Of twenty-one cases of cerebellar abscess, in eight only was pain referred to the occiput, while in three the pain was referred to the forehead; and in five cerebral abscesses the pain was referred entirely to the occiput.

SOME POINTS CONCERNING THE OPENING OF THE MASTOID PROCESS.

DR. THOMAS HEIMAN, of Warsaw, enumerates the accepted indications for opening the mastoid, and makes some additions to them (*Archives of Otolology*, vol. xx. pp. 132-141). The indications are as follows:

1. In acute purulent otitis media, complicated with inflammation of the mastoid process, when the inflammatory symptoms, like the swelling of the skin, the fever, the persistent and severe pain, do not yield to antiphlogistic treatment (ice, leeches), and Wilde's incision.

2. In acute and chronic purulent otitis media, when the escape of the secretion is impeded by granulations in the middle ear or stenosis of the external auditory canal, causing recurrent swelling, redness, painfulness of the skin of the mastoid process; or, in the absence of these objective symptoms, when there is suspicion of inflammation of the mastoid process.

3. When the mastoid process is apparently healthy, but the removal of pus or cholesteatomatous masses through natural channels is impossible, and symptoms dangerous to life manifest themselves.

4. In congestive abscesses and fistulæ in the region of the mastoid process; to which Heiman adds, "when this cannot be cured within a certain time, and the general condition is satisfactory, and the patient is free from any dyscrasia."

5. In persistent, cutaneous pain in the mastoid process, yielding to no other treatment, though there is no retention of pus and the mastoid seems healthy; especially, however, when it seems sensitive to pressure. To which the author adds, "and also in the absence of pain in the mastoid process, and in free discharge of the secretion, when in acute and chronic otitis media there is continuous though not high fever, which does not yield after some time to local or general treatment."

6. As a prophylactic operation in symptoms of retention of secretion and inflammation of the mastoid process, when death is to be feared on account of imperfect disinfection.

To these Dr. Heiman adds two new indications, viz.:

7. In acute purulent otitis media in which there is no inflammation of the mastoid process and no retention of secretion, but in which the discharge is very profuse, does not yield to the usual methods of treatment after a certain

time, two to three weeks, or even increases, especially however, when fever supervenes.

8. When there are distinct symptoms of inflammation of the brain and the meninges, although in such cases the chances of success are very doubtful.

These conclusions are based on sixty-seven operations on the mastoid performed by Heiman.

[We are surprised to find *prolapse of the posterior inner and upper wall of the auditory canal* not mentioned as one of the most pathognomonic signs of intra-mastoid inflammation and suppuration. Indication No. 7 should be weighed most carefully even by the expert. As the author says, "especially cases coming under this indication recover without an operation."—ED.]

CEREBRAL LESIONS DUE TO CHRONIC PURULENT OTITIS MEDIA.

DR. POULSON, of Copenhagen, having examined the notes of autopsies in the public hospital of Copenhagen for the years 1870 to 1889 inclusive, found in 10,159 cases, 28 in which death was attributed to an intra-cranial affection due to chronic purulent otitis media (*Nordiskt medicinskt Archiv*, vol. xxiii., No. 14). There were twelve cases of cerebral abscess, eight in the temporal lobe, seven adults and one child; three in the cerebellum, all adults. One case presented abscess in the cerebellum and in the occipital lobe (a child). Two of the temporal abscesses were opened by trepanation of the cranium. One case recovered entirely; the other died of diffuse meningitis. Not much diagnostic significance is attached to the fever in such cases; it is not great in uncomplicated cases of abscess in the brain. Among symptoms of compression of the brain, the slowness of the pulse is important, but not pathognomonic. Cerebral abscess often has a very chronic development. Sometimes the only symptoms are the final ones—somnolence and coma. Among the symptoms of temporal abscess is sensory aphasia. Troubles in speech may also occur in abscess on the left side. Hemiplegia may occur on side of body opposite to affected ear. This was observed in five of the cases reported. In all the cases narrated by Poulson a sinus-thrombosis furnished the link between the otitis and the cerebral abscess.

Trepanation furnishes, of course, the only means of opening the abscess. The author relates a case of a woman, thirty-two years old, affected with chronic purulent otitis, right side. Patient began to suffer from headache and vomiting. The mastoid was resected, but all the symptoms persisted and prostration increased. The cranium was trephined fifteen millimetres above the auditory meatus and an epidural abscess was evacuated. The patient remaining, however, in a sleeping condition, and paralysis presenting itself on the left side in the face, arms, and legs, the dura mater was then opened, and a considerable quantity of pus escaped from the temporal lobe. The cavity of the abscess was then drained, and the patient recovered entirely.

Nine cases of sinus thrombosis are given—one of the superior and inferior petrosal sinus, the others of the lateral sinus. Some of these cases offered no special symptoms, while others manifested marked pyæmic symptoms. The author is disposed to be satisfied with opening the sinus without resorting to ligation of the internal jugular vein.

The author then reviews the various cerebral symptoms in such cases, and

advocates an explorative trepanation of the cranium, when retention of pus in the tympanic cavity or mastoid cells can be excluded. Also, when the diagnosis between sinus-thrombosis and cerebral abscess is uncertain, the author advises first opening the lateral sinus, and then, if the examination is negative, to proceed at once to expose the temporal lobe.

CHRONIC PURULENT INFLAMMATION OF THE MIDDLE EAR, WITH PERFORATION OF SHRAPNELL'S MEMBRANE (MEMBRANA FLACCIDA).

In this article PROF. GRUBER, of Vienna, considers the very important point of "how these purulent inflammations should be treated" (*Medical Press*, London, No. 2713). "As a general rule, surgical interference has to be resorted to. . . . A second incision or enlargement of the primary perforation may have to be performed. Where greater destruction has taken place, a more heroic operation may be required, as when caries is present the small bones and part of the temporal bone may have to be removed." If the more heroic operation is unnecessary, Gruber "begins treatment by carefully disinfecting the whole ear by a solution of common salt, and after all foreign matter has been removed, rinsing the whole with sublimate solution, 1 to 1000." If the perforation is to be enlarged, the galvano-caustic is preferred as being more suitable for treatment and destruction of infectious germs which may be present. Granulations may be scooped out. After all septic matter is removed and hemorrhage checked, we are advised to pack the cleaned attic space with iodoform or sublimate gauze tampons, and to close the outer ear by the same substance. These tampons may be left in position "for a few days, unless untoward symptoms appear, such as pain, fever, etc., or where the discharge or secretions are still abundant." "If the case proceed favorably, with very little secretion, five or eight days should elapse before any removal of the dressing. . . . As soon as the inflammatory secretion has ceased, tamponing should cease also, but a tampon should be laid outside as a protection." One case is given as cured in one month by this treatment.

AFTER-TREATMENT OF MASTOID PERFORATION.

F. KRETSCHMANN, of Magdeburg, maintains that the final result of the artificial opening of the mastoid depends upon the after-treatment (*Sammlung klinischer Vorträge*, von Volkmann, No. 1, Heft 7, 1st series). Attention must be paid to two points, viz., the diet, and the condition of the wound most likely to check the purulent process.

The patient should remain in bed for a week. The food must be nutritious but plain. The bowels must be kept regular. Alcohol must be avoided, unless the heart is weak or the patient a regular drinker. Physical efforts and mental excitement must be avoided. Local treatment varies according to whether we are dealing with an acute or a chronic process. While in the former the chief aim need be only to remove all diseased matter, it not being important to have opened the antrum, in the chronic cases the middle-ear spaces must be thoroughly washed out, which demands an opening of the antrum, and that the opening thus gained be maintained for some time.

When the operation is done, the hemorrhage quelled, and the wound irrigated, shall the soft tissues be sutured? Schwartz, Jacoby, Politzer, and others suture the upper and lower angle of the wound, allowing only in the middle of the wound an opening for the introduction of a drainage-tube or a tampon. Suturing the wound is, of course, indicated when a rapid closure is desired, but in cases of chronic purulency treatment of the wound without sutures is desirable. The latter prevents retention of secretions and burrowing; it permits an accurate view of the wound and any treatment of the wound-canal which may be demanded. It also does away with the necessity of using the leaden peg and allows a generous tamponading of the wound. Tampons are preferable to drainage-tubes because they check bleeding and prevent secondary hemorrhage, they are antiseptic, prevent subsequent infection of the wound, and stimulate granulations. The antiseptic material in the tampon is of secondary consideration. Iodoform is very popular. The tampon method is especially serviceable in acute caries of the mastoid, in which intense œdema of the soft parts interferes with suturing, where the softened bone must be removed extensively, and where perhaps the sinus transversus or the dura mater has been exposed.

Many surgeons renew the dressings every day. In the Berlin clinic, as a rule, they are allowed to remain unchanged forty-eight hours, while in Vienna, Politzer and Gruber do not change them for four days, unless febrile symptoms render an earlier change necessary. If there is no fetid otorrhœa, the dressings may remain unchanged for four, six, or even more days. It is sufficient if the ear is cleansed much sooner. When the dressings cling, they should not be forcibly removed. Of course, this long-continued dressing cannot be allowed when fever sets in. The later dressings must be changed oftener, as the secretions from the increasing granulation tissue will become greater in quantity and tend to irritate the skin adjacent to the wound.

The fluids used in irrigation of the wound-tract should be corrosive sublimate from $\frac{1}{2}$ to 1 per cent., carbolic acid 1 to 2 per cent., and boric acid 4 per cent. If these cannot be used or are unsatisfactory, a physiological solution of chloride of sodium will answer. After this some iodoform may be lightly dusted over the wound. The mechanical effect of syringing is worthy of great consideration. When this, conducted through the mastoid wound and through the auditory canal, fails to bring away retained secretions, syringing through the Eustachian tube will often bring away thick masses of secretion.

Kretschmann believes that, as a rule, no form of peg is required to keep the wound open. He prefers, with Stacke, the tampons for this purpose. He uses the peg or stopper only in those cases in which the after-treatment must be left to some extent to the patients.

Forcible injections are open to the objection that they may send purulent matter further into the tissues instead of washing them out (von Bergmann). They also produce headache, vertigo, and fainting, or even worse accidents. Any obstruction in the wound-canal can be overcome by using a delicate probe. If this fails, then the granulations may be overcome by inserting into the canal a probe tipped with nitrate of silver. Immediately afterward the leaden pin must not be inserted, for fear of metallic precipitation. Better than cauterization is the use of a sharp spoon under cocaine. Forcible re-

introduction of the leaden pin should be avoided, as it causes not only pain and vertigo, but nearly always inflammatory reaction in the tract of the wound, with febrile symptoms. Gradually in the course of some weeks the wound-canal shows signs of permanency, and the skin tends to sink inward at its outer end and form a cicatrized cutaneous mouth. During this attention to the maintenance of a permanent canal through the mastoid, most careful attention must be paid to the condition of the tympanic cavity. The irrigation must take place through the antrum and from the external auditory canal. The wound-opening in the mastoid may be allowed to heal when the suppuration ceases. Schwartze claims that a cure is effected when the anti-septic gauze in the auditory canal and leaden peg in the mastoid opening are entirely odorless and dry when removed after twenty-four hours' contact with the tract of the operation, and also when the fluid injected into the Eustachian tube comes out clear and free from particles of bone. The good effects of the operation will be destroyed by allowing the wound to close too soon. If no communication with the antrum had been established at first, the wound need not be kept open longer than two or three weeks. Even this may be followed by surprising cure in many cases of chronic suppuration. In any case a permanent fistula in the mastoid is no disadvantage.

BONY GROWTHS IN THE MEATUS AUDITORIUS, AND THEIR REMOVAL.

URBAN PRITCHARD, of London, accepting the late Dr. Cassell's (Glasgow) broad classification of bony growths in the auditory canal, hyperostoses and exostoses, proceeds to consider their growth under a further subdivision, and presents his own methods of removal (*Archives of Otology*, vol. xx., No. 1). Hyperostoses are not so dense as exostoses, and the removal of the former is not much harder than that of ordinary bone-tissue.

Exostoses are divisible into :

1. Multiple: uniformly smooth and rounded; pale and glistening on the surface, even denser than ivory in consistence. Etiology of these growths, according to Pritchard, is largely gouty or rheumatic. It is admitted that frequent bathing acts as an exciting cause. They vary in size from that of a millet-seed to that of a split-pea. Their growth is slow.

2. Multiple: irregular in shape; of a pale pinkish hue and dull appearance, with broad bases, and of great density. Their origin can be traced generally to the irritative action of a long-continued otorrhœa; or even to the actual ossification of polypi. They grow slowly, but yet more rapidly than the first class, especially if the otorrhœa remains unchecked. Hence they may be met completely occluding the meatus, "a condition of obvious gravity."

3. "Single polypoid exostoses, consisting of a nucleus, so to speak, of ivory-like consistence, from the surface of which trabeculæ of cancellated bone project into a layer of fibrous tissue, the whole being attached to the outer edge of the osseous meatus by a pedicle." These are probably due to ossification of a fibrous or fibro-cartilaginous tumor. They are rare, but tend to comparatively rapid growth.

Exostoses of the first and second class are usually very tender to the touch of the probe, while the surface of those of the third class is not very soft and yielding, but almost insensitive. The first and second varieties may occur on

the walls of the middle ear, where they may produce irremediable deafness, if they attain much size.

Treatment consists in operation. The question to decide is *when* surgical interference should be undertaken, and also *how* it can best be carried out.

Hyperostoses should, as a rule, be removed at once. Exostoses of the first variety, as a rule, should be let alone unless they show a decided tendency to completely block the canal, when they should be operated upon. An exception, respecting operation, may be made in favor of those cases in which one of the growths is much larger than the other, as there is a danger of more rapid closure of the canal. These may be removed early, especially if they are situated near the osseous meatus.

In the second variety, as in the first, surgical interference is advisable under similar conditions. Another reason for early removal of these growths is the frequent presence of otorrhœa, which not only tends to promote rapid growth of the exostoses, but which may be impeded in its escape from the ear by the presence of these growths in the canal. It should be remembered also that the otorrhœa indicates the probable existence of carious bone behind the exostosis, when an operation may be considered almost imperative. Exostoses of the third variety should be removed at once.

Methods of removal. The chisel and hammer are considered as applicable to hyperostoses. Exostoses of the third variety, pedicellate bodies, may be removed by a dental elevator, or by a dental stump-forceps.

The first and second varieties of exostoses may be removed by the modified dental drill or burr, worked by the electro-motors (Dalby), or by the dental engine.

Instead of solid burrs, Pritchard has used lately a minute trephine, without central peg or tooth, averaging about five millimetres in diameter. The advantages of the trephine over the burr or drill seem to be :

1. As a rule only one sitting is necessary.
2. There is much less trouble from the slipping or running of the instrument on the surface of the growth, as it gets a better hold in the bone, and even if it does slip there is less risk to the meatus, as the trephine, unlike the burr, is smooth on the outside.
3. No delay is caused by the change of instruments; the same trephine will last throughout.
4. There is less filing the growth and converting it into débris with the trephine than with a drill; therefore less need for removing and reapplying the instrument.
5. For the same reason there is less blood, and therefore less obstruction to the view.

The author's operations have been performed upon the anæsthetized patient, in order to save pain and keep the patient still.

TENOTOMY OF THE TENSOR TYMPANI.

Hyrtl and Von Troltsch suggested tenotomy of the tensor tympani, and Weber-Liel was the first to perform it. KESSEL has recently revived the operation, and gives the following indications as guides (*Archiv f. Ohrenheilkunde*, Bd. xxxi.):

1. In paralysis of the stapedius muscle, with undisturbed function of the tensor tympani muscle.
2. In tonic spasm of the tensor tympani muscle.
3. In cases of perforation of the membrana tympani in the region of the pyramid of light; kidney- and heart-shaped perforations.
4. In hypertrophic catarrhs.

In the fourth condition the results are good if the stapes is still movable in the oval window. If the stapes is fixed in the oval window no good result can be obtained by the operation.

Before the operation the auditory canal is disinfected, and anæsthesia is produced by a 30 per cent. solution of cocaine.

SUGGESTIONS REGARDING INTRA-NASAL PRESSURE.

In the paper by DR. A. A. BLISS, of Philadelphia (*University Medical Magazine*, 1891), there are so many points of natural interest to the aurist that we note with pleasure some of the statements and suggestions contained in it. The condition producing intra-nasal pressure is that resulting from the contact, at one or more points, of surfaces which normally should be separated by an unobstructed space. The various symptoms may be summarized as follows: "Excessive muco-purulent discharge from the post-nasal space into the pharynx; pain within the nose, with excessive serous or mucous discharge and sneezing; occlusion of the nares; supra-orbital pain, associated not infrequently with pain at the vertex, occiput, and back of neck; a feeling of discomfort in the eyes, sometimes with lachrymation; cough, often associated with hyperæmia of the vocal cords, but frequently without this condition; infra-orbital pain; pain in the ears due to middle-ear catarrh or tubal catarrh (Eustachian); pain in the ears without visible signs of inflammation; hyperæmia of the fauces; huskiness of the voice, with imperfect action of the adducting muscles; dysphagia; sensations as of foreign substances in the throat; oppression over chest; palpitation of the heart; asthma."

The author recommends that "adenoids" from the post-nasal space be removed with the patient under ether, and the instruments considered the handiest by him are "fine curettes or the crocodile forceps, introduced through the nares, their action being assisted and regulated by the forefinger of the operator's other hand, introduced into the post-nasal space through the mouth."

TRAUMATIC OCCLUSION OF THE EXTERNAL AUDITORY MEATUS.

DR. MATTHIAS L. FOSTER describes a case of the above-named affection in which pressure maintained upon the newly formed diaphragm secured reduction of tissue and improved hearing (*New York Medical Journal*, 1891). The patient, a boy of eleven years, was injured by a heavy box which fell upon him. Three months after this injury he was sent to the Manhattan Eye and Ear Hospital on account of closure of the meatus of the right ear. After some search a very small opening was found in the superior posterior quadrant of the neoplastic diaphragm which led into a more

enlarged cavity. This opening was slightly dilated with a Weber lachrymal probe, and a piece of India-rubber drainage-tube was introduced into the opening and allowed to remain there a few days, after which it was found the opening had become large enough to admit the introduction of a larger tube, and in less than two weeks he could wear a tube of much larger size, and the hearing greatly improved—how much we are not informed. Absorption of such neoplastic tissue in the auditory meatus is preferable in most cases to its excision, as shown in this case. For five months the rubber tube was worn. Finally, a silver tube was inserted, which, it is proposed, shall be worn for a year or two.

OBSTETRICS.

UNDER THE CHARGE OF

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APPENDICITIS OCCURRING DURING PREGNANCY.

In the *Boston Medical and Surgical Journal*, 1891, No. 27, a case of pregnancy complicated by appendicitis is reported by MIXTER. The patient was prematurely delivered at seven months with a dead fœtus, following an attack of abdominal pain and tenderness, with fever. These symptoms persisted after her delivery, and an ill-defined tumor could be seen extending from the ilium to the ribs. When the abdomen was opened, an inflammatory mass caused by appendicitis was found, and in the mass were found two hard fecal concretions. The appendix was discovered at the lower end of the kidney; it was removed, and the abdominal cavity tamponed with iodoform gauze. Recovery ensued.

THE USE OF THE BALLOON DILATOR OF TARNIER IN DELAYED LABOR.

BONNAIRE (*Archives de Tocologie*, 1891, No. 12) concludes the report of forty-eight cases in the Paris Maternity in which Tarnier's dilator was used to accelerate labor. The principle of this instrument is similar to that of Barnes's dilators. It is larger, however, than they, and is intended to be left, after it has been introduced and filled, within the uterus to be expelled with the child. The indications for the use of this instrument are delay in labor necessitating active dilatation, and the induction of labor. It is contraindicated when a fibroid tumor is present, cancer, abnormal insertion of the placenta, albuminuria with symptoms of eclampsia, and cases where it is essential to preserve the bag of waters as long as possible.

REMOVAL OF THE SUPERIOR MAXILLARY BONE IN A PREGNANT PATIENT.

DARBY, in the *Virginia Medical Monthly*, 1891, No. 10, describes the case of a colored woman suffering from an extensive osteo-sarcoma of the superior maxilla. It was declared that the patient had but recently recovered from her monthly sickness, and her condition of emaciation was such that it was imperative to operate at once. When upon the operating-table, it was discovered that she was pregnant, with a viable fœtus; it was determined, however, to proceed with the operation, and accordingly the superior maxilla and tumor, weighing more than two pounds, were removed. The patient made a good recovery without the interruption of pregnancy.

THE TREATMENT OF ABORTION.

KUPPENHEIM, of Heidelberg, describes the treatment of abortion as practised in the clinic, in the *Deutsche medicinische Wochenschrift*, 1891, No. 53. Eighty-four cases are cited, in seven of which complications occurred. For methods of treatment, Kuppenheim first endeavors to empty the uterus by the finger, employing careful antiseptic precautions. He was generally successful in this procedure. Should this not be efficient, the curette should be employed, the sharp spoon being usually chosen. To check hemorrhage, injections of carbolyzed solution were made into the uterus, and the uterus was tamponed, when necessary, with iodoform gauze.

THE OPERATIVE TREATMENT OF ECTOPIC GESTATION IN THE LATER MONTHS OF PREGNANCY.

FROMMEL reports three cases of ectopic gestation in the clinic at Erlangen (*Münchener medicinische Wochenschrift*, 1892, No. 1). In the three cases an effort was made to extirpate completely the fœtal sac; two of them recovered; one perished from syncope soon after the operation. The writer's conclusions on the subject are that operation should be invariably undertaken in advanced cases of ectopic gestation. He favors the total extirpation of the fœtal sac through the median line of the abdomen. The plan of stitching the fœtal sac to the edges of the abdominal incision is to be followed only when extirpation is absolutely impossible. Nothing is gained by waiting for the operation until the fœtus has perished; the obstetrician should remove the fœtus as soon as its presence outside the uterus has been discovered.

AMPUTATION OF THE UTERUS AFTER PUERPERAL PERITONITIS.

In the *American Journal of Obstetrics*, January, 1892, LAPHORN SMITH reports the case of a multipara who had retained placenta. It was decided to wait for some hours, hoping that the placenta would be expelled under the administration of ergot, as manual efforts at its delivery were not successful. A midwife who had been in attendance against the physician's directions endeavored to remove the placenta, and secured a portion of it, badly lacerating the remainder. The attending physician removed a quan-

tity which the midwife had allowed to remain. Septic infection and fever supervened. It was decided that the uterus had become infected with sepsis, and hence amputation of the uterus was chosen. When laparotomy was performed, the peritoneum was found free from lymph or pus. The uterus and its appendages were congested, and the latter contained no pus. Hysterectomy was accordingly decided upon and performed, the stump being brought outside the abdomen, the peritoneum stitched carefully around the stump. The abdomen was closed without drainage, after copious irrigation. Pain after the operation was relieved by turpentine stupes and salines. The wire of the Kœberlé's constrictor had to be tightened several times after the operation, as slight oozing was observed. The patient recovered. On examining the uterus removed, its interior was found of a dark-purple color and containing a semi-purulent liquid. The walls of the uterus were soft and friable, and contained remains of the placenta so firmly adherent that it was almost impossible to separate them.

THE ACTION OF ERGOT AND ERGOTINE.

WERTHEIMER and MAGNIN (*Archives de Physiologie*, 1892, No. 1) publish the results of their investigations upon the action of ergot. They find by intra-venous injection of ergotine a notable fall in blood-pressure, preceded and followed by an increase. The simultaneous diminution in the size of the kidney indicates that the fall in pressure cannot be attributed to a vaso-dilatation of the abdominal organs. The direct examination of intra-ventricular pressure shows that it results from an enfeeblement of the cardiac contractions. Following hypodermatic injection, ergotine raises blood-pressure without a preceding depression. When injected into the blood, ergotine produces marked contractions of the stomach; in subcutaneous injection, its action upon this organ is still manifest, but less energetic. A preparation known as ergotinine, given by intra-venous injection, raises blood-pressure and slows the heart. In moderate doses, it has no effect upon the viscera.

ABORTION FOLLOWED BY RETAINED PLACENTA WITH FIBROID DEGENERATION.

MILLAR reports (*Edinburgh Medical Journal*, January, 1892), the case of a multipara who had been irregular in her menstruation for some time, and after several months of this irregularity, had a profuse discharge for several weeks, pale in color and slightly offensive. She was seized with abdominal pain, and expelled a fleshy-looking mass, which proved to be a placenta. It was found to consist of firm fibrous tissue; the maternal surface was convex and rough, the foetal concave and smooth. No trace of the foetus or its appendages was observed. The placenta looked bleached at its apex, and at the base were signs of recent hemorrhage. It contained bands of fibrous tissue with small cysts and blood-clots undergoing degeneration. Separation had apparently begun at the internal os and extended to the fundus, and complete separation of the placenta had consumed, probably, four months' time. Abortion had presumably occurred after eight weeks'

pregnancy. The patient made an uninterrupted recovery without the occurrence of septic infection.

THE PREVENTION OF PUERPERAL DISEASE.

HOFMEIR (*Deutsche med. Wochenschrift*, 1891, No. 49) discusses the question whether the teaching of obstetrics, as practised in maternity hospitals where students are allowed to examine the patients during labor, is productive of puerperal disease. He compares the morbidity rate in the Würzburg clinic with the published statistics of other clinics, and concludes that instruction by examinations during labor is perfectly possible without injury to the health of the patient, provided preliminary disinfection is practised and all possible antiseptic precautions observed. He lays especial stress upon preliminary disinfection, and adds also that the thorough practice of disinfection of the birth-canal of the mother is not a source of danger, as has been claimed by many, but, on the contrary, results in a diminution in puerperal morbidity and mortality.

THE MEDICO-LEGAL ASPECT OF RUPTURE OF THE UTERUS.

This question is discussed by FRITSCH, in the *Deutsche med. Wochenschrift*, 1891, No. 51. Reviewing our present knowledge on the subject, he finds a consensus of opinion in the main regarding the indications for operation, and lays down the view that where these indications are present, an unfavorable termination is not to be ascribed to any fault of the operator, but to the conditions which made the operation necessary. Every effort should be made which offers the slightest prospect of saving human life; the question as to whether the rupture is spontaneous, or the result of violence, is not the question to be brought before the court at all. The one point for decision is: Was the procedure attempted by the physician justifiable? If this can be proved, he is not to be held responsible for the consequences.

GYNECOLOGY.

UNDER THE CHARGE OF

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TETANUS AS A COMPLICATION OF OVARIOTOMY.

PHILLIPS (*Lancet*, January 16, 1892) has made a study of this subject based upon sixty-four cases occurring in the practice of surgeons in Great Britain and on the Continent, and presented his conclusions at a recent meeting of the Royal Medical and Chirurgical Society. He stated: 1. That during

ovariotomy there was some special element of nerve irritation, whether from the separation of adhesions or the ligation of the pedicle. 2. That there was nothing peculiar in the form of tetanus as compared with that following other surgical operations. 3. That although some cases of tetanus seemed to originate *de novo*, a septic origin could nearly always be found. 4. Investigation of the theory that tetanus might be due to the presence of garden-mould showed that it was not well founded; however, it was advisable not to operate either in a room freshly plastered or near a garden in which the earth was recently turned. 5. That as soon as the initial symptoms of tetanus were noted, local irritation should be carefully eliminated before a course of general treatment was adopted. 6. That the folding and re-ligating of a broad pedicle was inadvisable.

In discussing the paper, DORAN stated that he had observed only two cases of tetanus in nearly thirteen hundred abdominal sections; both patients were exposed to draughts during the operation, the weather being raw. Careless nursing seemed to be responsible for not a few cases.

HULKE was a believer in the bacterial origin of the affection, since a specific bacillus had been isolated, cultured, and produced tetanus when injected into animals. No treatment seemed to avail in acute cases.

LOCKWOOD called attention to the fact that the tetanus bacillus was constant in pus, and was destroyed by oxygen. It could be carried in dust, and earth was the common medium of infection. Rigid asepsis, especially the boiling of instruments for an hour, alone furnished positive immunity.

MACNAMARA referred to the fact that tetanus was formerly of common occurrence in India, under the same atmospheric conditions which favored the spread of cholera and malaria—the coexistence of an east wind with a sudden fall of temperature. Since the inauguration of aseptic surgery there had been a marked decrease in the number of cases.

[It seems as if the writer had undervalued the influence of climate and atmospheric changes as factors in the production of tetanus after ovariectomy. This would appear to be the case considering the extreme infrequency of this complication in America. Some of our most prominent operators have never seen a case, and at the Woman's Hospital none has occurred within the past ten years. This applies to the pre-aseptic as well as to the days of rigid asepsis. Moreover, in this country every surgeon performs laparotomy, and under every possible combination of circumstances, yet how rarely do we hear of a case of tetanus!—H. C. C.]

VAGINAL HYSTERECTOMY FOR CANCER.

At recent meetings of the Surgical Society of Paris (*Revue Médico-chirurgicale des Mal. des Femmes*, December, 1891) the following discussion took place:

TERRIER reported thirty-four operations with an immediate mortality of nearly 25 per cent. One-third of the patients were living, two having survived for three years, one for nearly five years, and one over six years. He believed that a recurrence was to be expected in two-thirds of all the cases.

RONTIER had performed total vaginal extirpation only five times in cases of cancer of the cervix uteri, but in no instance had a patient survived six

months, although the cases had been carefully selected; when the disease was limited to the body of the uterus he had had better results, one patient being well after nearly five years had elapsed. His immediate mortality was *nil*.

SEGOUD reported thirty-three cases of total extirpation (eight cases of cancer of the corpus uteri), with a mortality of 21 per cent. Only one patient was free from recurrence at the end of three years.

VERNEUIL reported the case of a patient upon whom he had performed high amputation of the cervix uteri for carcinoma (the diagnosis having been verified by the microscope) twenty-two years before. A recent examination had shown that she was entirely well. Another patient eight years after the same operation was free from recurrence. He still believed that it gave a better prospect of cure than total extirpation.

BOVILLY had performed total extirpation twenty-one times during the past three years, with an immediate mortality of 43 per cent. Five patients were free from recurrence after intervals varying from fifteen months to a year and a quarter. He had performed fifty hysterectomies in all, with sixteen deaths; eighteen of the thirty survivors had a recurrence within from two to twelve months after the operation. Since an early recurrence occurred in every one of fifteen other cases in which amputation of the cervix was performed, he argued that unless the entire uterus be extirpated it was better to abstain from all operative interference.

RICHELOT affirmed that vaginal hysterectomy was an easy and safe operation, even when the uterus was fixed by adhesions. If the disease had extended to neighboring organs (!) it could still be readily removed piecemeal (*par morcellement*). He did not believe that the case cited by Verneuil, in which there was freedom from recurrence for twenty-two years, was one of cancer at all; it was simply hypertrophy of the cervix due to metritis. An important argument in favor of total extirpation was the fact that in a large proportion of cases of cancer of the cervix uteri, foci were found at the fundus (in nine specimens out of twenty-three recently examined).

[It will strike the fair-minded reader that the statistics reported by the distinguished gentlemen above mentioned do not present the most convincing argument in favor of the radical operation, as compared with those of German surgeons. We are forced to conclude that the French operators have not used the same care in the selection of their cases, judging by their high mortality (20 to 30 per cent.) and early recurrence. The opinion that no operation but vaginal hysterectomy is of any avail in the treatment of cancer of the uterus is clearly an extreme one, not justified by the results of palliative treatment as reported by perfectly honest and reliable observers.]

MENSTRUAL CONGESTION OF THE DENTAL PULP.

RÉGNIER (*Revue Médico-chirurgicale des Mal. des Femmes*, December, 1891) reports the case of a lady who had a carious tooth plugged with platinum, the pulp being exposed while the cavity was bored out. Every month thereafter, exactly at the time of menstruation, she had severe neuralgia in the affected tooth, lasting for forty-eight hours. The only satisfactory explana-

tion seemed to be that there was a periodical congestion of the pulp, causing it to swell and press against the filling, thus producing neuralgic pain.

ENDOSCOPY IN DISEASES OF THE FEMALE URETHRA.

EBERMANN (*St. Petersburger med. Wochenschrift*, 1891, No. 47) has devoted considerable study to this subject. He calls attention to the following points to be noted in examining the normal urethra with the endoscope: The mucous membrane is thrown into folds which radiate from the dark spot which represents the centre of the endoscopic image to the periphery. The color of the urethral mucosa is a delicate pinkish-yellow. Littre's glands cannot be seen unless they are swollen and inflamed.

In acute gonorrhœal urethritis the endoscopic appearances are the same as in the male, *i. e.*, the mucosa is dark-red, swollen, and the normal folds are obliterated; the membrane bleeds readily and is extremely tender to the touch. In chronic urethritis vascular granulations of a dark-red color are seen. Littre's glands appear as prominent elevations, the normal folds of the mucous membrane being obliterated in their vicinity. Rarely strictures of the female urethra are found, usually of traumatic origin; they appear, when seen through the endoscope, as white cicatrices.

Grünfeld has described fissures at the neck of the bladder, which are most clearly seen through a fenestrated instrument. They are best treated by direct applications of nitrate of silver (a drachm to the ounce), followed by the introduction of a gelatin pencil containing half a grain of muriate of cocaine. (Several successful cases cited.) Acute urethritis in the female is to be treated by rest, regulation of diet, sitz-baths and douches, the chronic form by applications of nitrate of silver solution or pure tincture of iodine (!), followed by the introduction of iodoform pencils.

CLOSURE OF VESICO-VAGINAL FISTULÆ BY TRANSPLANTATION OF THE BLADDER-WALL.

BARDENHEUER (*Deutsche med. Wochenschrift*, 1891, No. 50) reports two successful cases of this operation for difficult utero-vesical fistulæ, the technique of which is as follows: With the patient in Trendelenburg's posture, supra-pubic cystotomy is performed, and the peritoneum is dissected away from the anterior surface of the bladder as low as the fistula. The adhesions and cicatricial tissue in the vicinity of the bladder are now separated, the edges of the fistula are denuded, and while they are pressed together by a finger passed into the bladder through the supra-pubic wound, silver wire sutures are introduced from the vaginal side. The catheter is passed every three hours, and the artificial wound is left open and plugged with gauze. This method, the writer believes, will also be useful in closing large defects in the bladder left after the removal of tumors by epicystotomy, by introducing the finger and sliding over flaps of healthy tissue into the wound while the sutures are passed.

VARICOCELE IN THE FEMALE AS A CAUSE OF NEURASTHENIA.

WIEDERHOLD (*Deutsche med. Wochenschrift*, 1891, No. 37) has noticed that neurasthenia frequently coexists with dilatation of the veins of the pampini-

form plexus, and suggests that instead of removing the ovaries in intractable cases of hysteria the veins should be ligated, as in varicocele in the male. The ovarian pain is best relieved by massage, electricity, and hydropathic treatment.

CHANGES IN THE SIZE OF THE NORMAL UTERUS.

LINDBLOM (*Zeitschrift für Geb. und Gynäkologie*, Bd. xxii., Heft 1), from careful observations conducted during menstruation and in the intervening periods, has found that during massage the uterus changes its size and consistency, becoming alternately soft and compressible, and round and hard. The swelling begins at the fundus and extends to the cervix, the portio vaginalis remaining unchanged. The irritability persists from a few seconds to ten minutes. The uterus seems to become more sensitive alternately with the enlargement and contraction. He attributes the phenomenon rather to the erection of cavernous tissue than to muscular contraction. The irritability diminishes at the beginning of menstruation, but increases at the end, the uterus becoming harder; this is, therefore, the best time to treat displacements of the organ.

STERILITY IN THE MARRIED.

SEELIGMANN (*Berliner klin. Wochenschrift*, 1891, No. 41) takes a more hopeful view of the subject than most writers. He speaks enthusiastically of the good effects of massage and electricity, especially in cases of chronic disease of the adnexa following parturition, with resulting sterility. Under the influence of massage he has seen the ovary reduced in size, and its functional activity restored, and the distorted tube straightened and rendered patent.

In applying galvanism he always uses the negative intra-uterine electrode, since it has only a weak cauterizing action, and causes an alkaline reaction of the secretion, favorable to the prolonged activity of the spermatozoa.

As regards sterility in the male, he states that the prevailing ideas with regard to the effect of epididymitis are too pessimistic, since there are many cases in which men thus affected have been fully capable of procreation. As a prophylactic measure in every case of gonorrhœal epididymitis, as soon as possible after the acute stage regular massage should be practised, with applications of ichthyol, and later permanent compression.

THE MOST FAVORABLE TIME FOR CONCEPTION.

BOSSI (*Riv. di Ost. e Gin.*, 1891, No. 10; *Centralbl. für Gynäkol.*, 1891, No. 52) reports fresh studies of this familiar subject. His observations were conducted with great care upon the newly-married, sailors' wives (in whom the time of fruitful coitus was known), and in cases of artificial impregnations. Twenty-seven cases were analyzed, from which it was found that conception is most likely to occur just after the cessation of the menstrual flow. This is also the most favorable time for successful artificial impregnation. The writer has established the fact that spermatozoa deposited in the vaginal fornix remained active for seventeen days; hence fruitful coitus may occur before menstruation.

THE ACTION OF THE CONSTANT CURRENT ON THE ENDOMETRIUM.

PROCHOWNICK and SPAETH (*Zeitschrift für Geb. u. Gyn.*, Band xxii., Heft 1), from experiments both on the cadaver and on the living subject (when hysterectomy was subsequently performed, so that the uterus could be examined), arrive at the following conclusions: The action of the intra-uterine electrode consists in a coagulation-necrosis, which is most marked at the anode, is strongest when a platinum electrode is used and weakest with a copper one, carbon occupying an intermediate position. After a course of galvanization it was found that the endometrium was entirely devoid of epithelium, and was transformed into a layer of cicatricial tissue.

PÆDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,

OF PHILADELPHIA;

ASSISTED BY

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A HAPPY APPLICATION OF INSUFFLATION.

RENAULT (*Le Progrès Médical*, 1891, No. 51, p. 475) records an instructive case occurring under his notice at the Maternité. A child about a month old had had a cough for three days, and at the end of that time was brought to the notice of the author. Well-marked broncho-pneumonia was found, with a temperature of $101\frac{2}{3}^{\circ}$ F. Dyspnœa continued to increase until the following day, when the nurse in the ward was called to find the child in a state of almost complete asphyxia. The skin was cold, the face cyanosed, the lips blue, and the respiratory movements very shallow and failing. Without hope of reviving it, but rather that the mother, who was present, should not think the child was permitted to die without an effort at relief, the nurse took up the insufflateur, which was in daily use in the wards for resuscitating asphyxiated newborn infants, and applied it to the mouth of the dying child. After an occasional interruption in the operation during a period of five minutes, the bluish color of the face and lips began to give way to a rosy tint. This unhopèd-for success gave renewed encouragement to her efforts, and after a quarter-hour's work the child had so far been resuscitated as to permit of more active treatment with a mustard bath, dry cups, and diffusible stimulants. Another attack of asphyxia was treated successfully in the same way, after which the case went on to an uninterrupted recovery.

THE DIAGNOSIS OF ACUTE BRONCHO-PNEUMONIA FROM BRONCHITIS.

L. EMMETT HOLT (*Archives of Pediatrics*, 1891, No. 12) believes that a very large number of cases formerly classed as acute bronchitis are really cases of broncho-pneumonia, and that this includes nearly the whole group of cases formerly described under the heading of "capillary bronchitis." In infants it seems almost impossible for an acute inflammation of the finer bronchi to occur without extension to the alveoli which surround them, unless death takes place at a very early stage. While in well-marked cases of either disease the diagnosis is not difficult, there is a large number of intermediate cases where positive diagnosis is extremely difficult. The main points of differentiation may be grouped under three heads: the difference in temperature; the severity of the general symptoms; and the character of the physical signs. Acute bronchitis commonly begins with a rise to 102° or 103° , usually after twenty-four hours falling to 100° , and remaining between this point and 101.5° for several days, gradually reaching normal. If a case begins with this initial temperature, and the fever rises on three or four successive days to 102.5° or 103° , it is almost certain that something more than bronchitis exists. If the fever is due to disease of the lungs, we may be reasonably sure of pneumonia. The existence of a lower temperature, however, does not preclude pneumonia, so that, after all, the severity of the general symptoms must have the greatest weight. The physical signs of consolidation, dulness, bronchial breathing, etc., are conclusive evidences of pneumonia, when the symptoms are doubtful; but here, again, the absence of such signs does not exclude pneumonia, even though they are never obtained throughout the attack. The auscultatory signs to be considered are pleuritic friction sounds, the character and localization of the râles, and the nature of the respiratory murmur. Pleuritic sounds may be looked for in broncho-pneumonia whenever there are large areas of consolidation; but, according to the author's experience, almost never under other conditions. The character of the râles is of little help, for the reason that in broncho-pneumonia it is the bronchitis and not the pneumonia that produces most of the abnormal sounds. The localization of the râles is of more value. Unilateral bronchitis that is only bronchitis is of very doubtful existence. The signs of localized bronchitis of the finer tubes give a sufficient reason for diagnosing pneumonia in doubtful cases—provided, generally, that tuberculosis may be excluded. There are cases of disseminated broncho-pneumonia which give rise to generalized subcrepitant râles over the whole chest. These are the cases which the author believes have been described by many of the older writers under the term "capillary bronchitis."

LAVAGE OF THE STOMACH IN THE DIARRHŒAS OF INFANCY.

FLORAND (*La Médecine Moderne*, 1891, No. 53, p. 898) reports five instructive cases of infantile diarrhœa treated by lavage of the stomach according to Hutinel's method. From the uniform success of the treatment in his hands, the author believes that every child suffering from diarrhœa, whether still nursing or during or after weaning, and whether the diarrhœa be or be not accompanied by vomiting, should be submitted to lavage of the

stomach, followed by calomel and a diet of albumin water and "grog." The operation is practised with great ease. After inserting a cork between the jaws, the operator introduces into the stomach a red caoutchouc urethral catheter, of appropriate calibre, the outer extremity of which embraces a funnel, the whole tube being made long enough to permit of a siphon action. When the tube is in position one or two glasses of boiled water or Vichy water are slowly poured into the stomach, and again removed by siphoning. If the water which returns is foul, the washing should be repeated two or three times, and immediately afterward a small dose of calomel (one-seventh to three-fifths of a grain) should be given, followed by a second dose, and often a third, at hour intervals. A single lavage is often sufficient, but two or three may be required. Albuminous water and "grog" are then given in teaspoonful doses at short intervals.

Most frequently the first results are immediate. The child goes to sleep, the temperature falls, and the vomiting ceases completely; while the evacuations lose their odor and regain a normal condition. The water diet is surprisingly well borne, and will support the strength for several days, if necessary, without the addition of any other alimentation. Feeding must be recommenced with extreme caution, and at the beginning should consist of ass's milk, clear bouillon, or sterilized milk, in very small quantities. If, after returning to feeding, some green diarrhœa still persists, a little lactic acid or four or five drops of hydrochloric acid may be used with advantage.

The author believes that the day of potions of bismuth and elixir of paregoric is past, and that lavage of the stomach is the ideal treatment.

PEPTONURIA IN MEASLES.

Contrary to the researches of Von Jaksch, Pacanowski has found peptonuria in almost all the infectious diseases (typhoid fever, intermittent fever, variola, scarlatina, erysipelas). Measles alone seemed to be an exception: in none of the cases studied by Pacanowski was a peptonuria recognized. Some further light on the subject is given by the more recent observations of KÖTTNITZ (*Centralblatt f. medicinische Wissenschaft*, 1891, No. 18, p. 513), who, during an epidemic of measles, had an opportunity of examining the urine of a large number of cases, and found peptone in almost all, sometimes in notable quantity. On the contrary, the peptonuria remarked by Loeb in measles was not found in a single instance. The occurrence of peptonuria in infectious diseases is explained by the destruction and reabsorption of albuminoid principles; and in certain of these diseases it is necessary also to count upon the absorption of toxalbumins. The contradictory findings of observers who have investigated this subject are explained by the author as due to the difficulty of analyzing the urine. In all cases he thinks it necessary to obtain in the last place the reaction of biuret.

In reply to this, LOEB (*Centralblatt f. medicinische Wissenschaft*, 1891, No. 31, p. 577) maintains the frequency of propeptone in the urine in measles, and states that the search for this substance requires precautions which Köttnitz had probably not taken. In the first place, propeptonuria is noted only during or immediately after defervescence, or sometimes at the end of twelve or twenty-four hours after this. It is, therefore, important to examine the

urine at least twice daily. Again, when nitric acid is added drop by drop, it is necessary to wait for several minutes for the formation of a precipitate. The urine should be filtered and warmed. The reaction with acetic acid and cyanide of potassium gives very uncertain results. Finally, propeptone is not a simple body, but is made up of four albuminoid substances of different reactions; and it is, therefore, not astonishing that the reaction is not produced in some cases.

THE INCUBATION OF VARICELLA.

TALAMON (*La Médecine Moderne*, 1891, No. 32) has observed two cases which have given an opportunity of establishing beyond dispute the incubative period of this disease. The patients were a girl and a boy, and the interval between the day of contagion and the appearance of the first symptoms was in each case thirteen days. This agrees with the figures given by Gerhard—thirteen to fourteen days.

A CASE OF ENDOCARDITIS FOLLOWING THE RITUAL OF CIRCUMCISION.

The number of cases of acquired heart disease in nursing-infants in proportion to those of congenital origin is exceedingly small. In 45 cases of the acquired disease, Von Dusch found but 5 in infants under one year; among 95 cases observed by Steffan, 5 were in the first year; and in 53 reported by Hochsinger, only 1 such was noted. The following case, recorded by ADALBERT CZERNY (*Prager medicinische Wochenschrift*, 1891, No. 39, p. 447), is, therefore, interesting from its rarity as well as for its occurring under unusual conditions. A boy-child, born November 6th, was brought to Epstein's clinic on November 19th. The mother was a primipara, twenty-one years old, who, excepting a broad, cleanly granulating episiotomy wound, was found to be in perfect health. The child was well developed and well nourished, weighing 3620 grammes. The heart-sounds were normal, and there were no symptoms of congenital heart defect. On November 20th the boy was circumcised by a layman, and the wound healed kindly under a dressing of acetate of aluminium, and subsequently iodoform; so that, by December 10th, it appeared completely cicatrized. Until December 5th the child had grown satisfactorily, reaching at that date a weight of 4200 grammes, and having a temperature varying between $98\frac{3}{4}^{\circ}$ and $99\frac{3}{4}^{\circ}$. On the evening of December 5th the temperature rose to $102\frac{2}{3}^{\circ}$, and the child was very restless and disturbed. In the fifth intercostal space, left parasternal line, two distinct loud blowing murmurs were heard, which, taken in conjunction with the high fever and disturbed heart action, and the absence of signs of disease in other organs, made evident an acute endocardial inflammation. The area of heart dulness was not increased. For three days the fever was maintained, and by this time the diastolic murmur had completely disappeared, while the systolic had increased in intensity. Besides this, percussion made evident a rapid dilatation of the heart, so that on December 23d the area of absolute dulness was included between the left parasternal line, the second intercostal space, and an oblique line running from a point one centimetre outside the left nipple to the sternal third of the clavicle. This dilatation, as well as the systolic murmur, persisted as long as the child

remained under observation (until March 3d). The author regards the case as one of septic endocarditis arising from the circumcision wound, which, from its situation, was especially liable to septic infection. He adds this case to those already reported by Lehmann, Elsenberg, Konelsky, Hofmök and Bergmann, Strelitz, Wermel, and others, in which infection with tuberculosis, Winckel's disease, or tetanus followed the ritual of circumcision.

A CASE OF PAROXYSMAL HÆMOGLOBINURIA OF PROBABLE SYPHILITIC ORIGIN.

FLENSBURG (*Nordiskt medicinskt Arkiv*, 1891, Band xxiii., Heft 6) relates an interesting case of this kind occurring in a boy of eight years, who at birth had shown evidence of inherited syphilis. The father dated the urinary disturbance from an attack of acute pneumonia, with relapse, at the age of three years. The child was anæmic, but of good intelligence, and showed no traces of syphilis. The conjunctivæ were slightly jaundiced, the spleen somewhat enlarged, and there was a slight murmur with the first sound of the heart. On his entrance into the hospital, the examination of the blood gave a count of 3,200,000 red corpuscles, with a normal proportion of white, and showed no alterations in contour, either in the quiescent state or during the crises. Fleischl's instrument indicated 70 per cent. of hæmoglobin. The urine was sometimes albuminous, even in the intervals, but was otherwise normal, and no casts were found. The temperature was frequently a little elevated, especially toward evening. The paroxysms were habitually ushered in by shiverings, yawning, rise of temperature, and the passage of sanguinolent urine, containing no free corpuscles. Sometimes there were crises during which the urine was simply albuminous, without hæmoglobin; but the sanguinolent urine was almost always preceded and followed by urine exclusively albuminous. The liver and spleen were not enlarged after crises; the eye-grounds were normal, even during the attack; and no contraction of the pupils was noted. The blood separated by the hæmatokrit showed no dissolved hæmoglobin. Double staining of the blood with eosin and methylene-blue, after the method of Gabritschewsky, was also tried during the crises, but gave no unusual coloring of the corpuscles. An interesting fact was the possibility of provoking a paroxysm by chilling the hand for a few minutes after the arm had been surrounded for fifteen minutes with an elastic ligature.

Treatment by mercurial inunctions proved most successful, the red corpuscles having increased one million in the cubic millimetre, and the proportion of hæmoglobin rising from 70 to 105 per cent. The child was discharged temporarily cured, but some time afterward suffered again from these crises, though much less severely than at first.

A MIXED INFECTION BY THE STREPTOCOCCUS AND THE BACILLUS COLI COMMUNE.

SEVESTRE (*Revue Mensuelle des Maladies de l'Enfance*, January, 1892) records an interesting case of this character observed in a child of nine years. The onset was suddenly ushered in with headache, nausea, abundant epistaxis,

and marked prostration; there was moderate fever, albuminuria, an eruption of herpetic type upon the lips, and vomiting. On the fourth day there was temporary improvement, with fall of temperature, but this was soon succeeded by stiffness of the neck and a rise of temperature to 103° , and finally 104° , with the development of multiple purulent arthritis and disseminated pustules on the thighs. On the sixth day, without previous alteration in intelligence, the child fell into a tranquil delirium, and suddenly died. Various diagnoses had been entertained from one day to another—meningitis, typhoid fever, influenza, and scarlatina. The most rational interpretation seemed to be that it was an infectious state whose precise nature and origin could not then be determined. This was the more reasonably held to be the case when a small subungual panaris was discovered on one of the fingers, and was recognized to be the point of origin of the infection.

The autopsy showed the existence of meningitis, limited almost completely to the cerebellum, and the affected joints contained pus. The bacteriological examination and the cultures demonstrated the existence of the streptococcus in the panaris and in the herpetic vesicles. In the pus taken from the knee-joint during life, no microorganisms were found, and cultures were negative; but immediately after death, pus withdrawn from both knee-joints and that taken later from the meninges contained the bacillus coli commune.

In view of the interpretation of the researches of Bouchard and his disciples concerning the soluble products elaborated by microbic energies, some of which are vaccinant, others toxic, and others, finally, predisposant, the author regards the panaris, in this case, as the initial lesion, which had determined an infection whose positive manifestation could be found in the herpetic vesicles with their serum charged with streptococci. In presence of soluble products derived from this microbe, he further believes, the bacillus coli commune had become a truly pathogenic organism.

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MENTAL AFFECTIONS AFTER INFLUENZA.

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I do not intend to speak in this paper of the delirium which sometimes precedes, and at other times accompanies, the feverish attack of grip, but only of those forms of mental disturbance which occur when the fever has subsided, and after the patient has entered the period of convalescence. With regard to the former, I will only say that both the initial delirium and that which occurs during the attack appear to be of comparatively slight importance, except in those cases where there is a very strong hereditary or acquired neurotic predisposition. In such persons the feverish delirium may be the first symptom of a psychosis which may continue after the original illness has subsided. Where there is no such predisposition the delirium habitually ceases with the fever, without apparently leaving any trace in the nervous system of those who have been affected by it.

Although post-grippal psychoses have probably occurred in previous epidemics, proper attention has only been given to them after those visitations which we have recently passed through. Thus we find hardly anything worthy of note concerning them in the well-known *Annals of Influenza*, by the late Dr. Theophilus Thompson, recently republished by his son, Dr. Symes Thompson,¹ or the works of Schweich,² Kusnezow

¹ Influenza, or Epidemic Catarrhal Fever. Being a new and revised edition of "Annals of Influenza," by Theophilus Thompson, M.D. Edited by E. Symes Thompson, M.D. London, 1890.

² Schweich: Die Influenza. Berlin, 1836.

and Hermann,¹ and others. Kraepelin,² who has written an excellent paper on the influence of acute diseases in the causation of mental affections, published in 1881 and 1882, has entered fully into the different forms of insanity observed after intermittent and rheumatic fever, pneumonia and pleurisy, the acute exanthemata, erysipelas, typhoid fever, and cholera, but has not said a word on psychoses subsequent to influenza. The same observer has, however, more recently³ written a short but interesting article on some cases which have been under his care after the epidemic of 1889 to 1890; while we have further contributions to the same subject by Becker,⁴ Pick,⁵ Rosenbach,⁶ Joffroy,⁷ Pons,⁸ Bartels,⁹ Schmitz,¹⁰ Kirn,¹¹ Drasche,¹² Van Deventer,¹³ Metz,¹⁴ Brakenridge,¹⁵ Snell,¹⁶ Ladame,¹⁷ Mispelbaum,¹⁸ Bidon,¹⁹ Mairret,²⁰ Leledy,²¹ Savage,²² and others.

I will now shortly relate some cases of this kind which have been under my care, and then discuss the pathogenesis, prognosis, and treatment of these affections.

¹ Kusuczow und Hermann: *Influenza. Eine geschichtliche und klinische Studie.* Wien, 1890.

² Kraepelin: "Ueber den Einfluss akuter Krankheiten auf die Entstehung von Geisteskrankheiten," *Archiv für Psychiatrie*, vol. xi. pp. 137, 295, and 649; vol. xii. p. 287. Berlin, 1881, 1882.

³ *Ibid.*: "Ueber Psychosen nach Influenza," *Deutsche med. Wochenschrift*, 1890, No. 11.

⁴ Becker: "Geisteskrankheit nach Influenza," *Neurolog. Centralblatt*, 1890, No. 6.

⁵ Pick: "Geisteskrankheit nach Influenza," *Neurol. Centralblatt*, 1890, No. 4.

⁶ Rosenbach: "Einige Bemerkungen über Influenza," *Berliner klin. Wochenschr.*, 1890, No. 5.

⁷ Joffroy: "Délire avec Agitation maniaque dans l'Influenza," *Mercredi Médical*, No. 13, 1890.

⁸ Pons: "La Grippe chez les Aliénés," *Journ. de Med. de Bordeaux*, 22 Févr., 1890.

⁹ Bartels: "Einfluss der Influenza auf Geisteskrankheiten," *Neurol. Centralblatt*, No. 6, 1890.

¹⁰ Schmitz: "Influenza und Geisteskrankheiten," *Allg. Zeitschrift für Psychiatrie*. Berlin, 1890, p. 238.

¹¹ Kirn: *Die nervösen und psychischen Störungen der Influenza*. Leipzig, 1891.

¹² Drasche: "Ueber Influenza," *Wiener med. Wochenschr.*, 1890, Nos. 6, 17, 19, 21.

¹³ Van Deventer: "Ueber Influenza verbunden mit Geisteskrankheiten," *Centralbl. für Nervenheilkunde*, Mai, 1890.

¹⁴ Metz: "Heilung einer Paranoia nach Influenza," *Neurolog. Centralblatt*, 1890, No. 7.

¹⁵ Brakenridge: "The Present Epidemic of So-called Influenza," *Edin. Med. Journ.*, May, 1890.

¹⁶ Snell: "Influenza," *Allg. Zeitschrift für Psychiatrie*, Berlin, 1890, p. 418.

¹⁷ Ladame: "Des Psychoses après l'Influenza," *Annales medico-psychol.*, Paris, 1890, p. 20.

¹⁸ Mispelbaum: "Ueber Psychosen nach Influenza," *Allg. Zeit. f. Psych.*, 1890, p. 127.

¹⁹ Bidon: "Etude clinique sur l'Action de la Grippe sur le Système nerveux," *Revue de Médecine*, Paris, May and November, 1891.

²⁰ Mairret: "Grippe et l'Aliénation mentale," *Montpellier Medical*, Mai et Juin, 1890.

²¹ Leledy: *La Grippe et l'Aliénation mentale*. Paris, 1891.

²² Savage: "The Neuroses of Influenza," *The Lancet*, Nov. 9, 1891.

CASE I. *Neurasthenia and hypochondriasis*.—A single woman, aged thirty-five years, had influenza in March, 1890. Until then she had enjoyed excellent health, and her family history was unimportant. I first saw her in May of the same year, when she complained that ever since her attack she had been unable to attend to her occupation, which was that of a housekeeper. She had lost all confidence and nervous power, cried for no cause, could not sleep, or if she did so, was troubled with distressing dreams, from which she awoke in a state of terror. She had lost her appetite, suffered from a most wearying feeling of pressure on the top of the head, and was constantly in a state of the greatest despondency. On attempting to do anything she had a sensation as if her brain were moving about in her head, together with such throbbing as to excite the apprehension of an impending fit. Indeed, she felt sure that she had an incurable brain disease.

Percussion of the cranium sent a strong thrill through her body. The knee-jerk and other reflexes were much exaggerated. The fundus oculi was normal, the pulse feeble and irregular, 108; the tongue furred, the temperature subnormal, the urine had a density of 1004 and was very feebly acid. I prescribed sulphonal at bedtime, an aconite liniment to the head, hydrobromate of quinine with strychnine three times daily, and a much more nourishing and digestible diet than the patient had hitherto had. She was much improved in a fortnight, and in about three months was well enough to resume her occupation.

CASE II. *Melancholia*.—A young lady, aged nineteen years, was brought to me in April, 1890, by her mother, who informed me that ever since the girl had had influenza, six weeks ago, an extraordinary change in her temper had taken place. While formerly she had been of a cheerful and energetic disposition, and interested in a great variety of things, she had now become sullen in her behavior, and disinclined for work or conversation. When requested to do anything, she either took no notice or said she could not do it; she sat generally in a chair all day long, staring before her. She refused to go out, to eat, and would sometimes sit up all night. She often said that she was lost and could not be saved. Her previous history was good, as she had never ailed anything except measles and whooping-cough, and the family antecedents were also satisfactory. Both parents were alive and well, and there were six other children all in good health. The catamenia of the patient had appeared when she was fourteen years of age, and had ever since been regular and unattended with discomfort.

The patient had a dogged expression, answered questions not at all or in a perfunctory manner, and appeared to have a difficulty in articulating. The fundus of the eye was normal, the knee-jerk exaggerated, and the muscular power feeble, the dynamometer showing only 35° on the right and 20° on the left side. The tongue was furred, the temperature subnormal, and the pulse of low tension and beating at 128. The urine had a density of 1005, was neutral, and contained an excess of phosphates. The bowels were extremely sluggish, acting only every four or five days. I prescribed digitalis, quinine, phosphide of zinc, and aperients, and advised removal of the patient into different surroundings. For about a month after my first interview with her, she remained in very much the same condition; an improvement then became manifest, and in four months after the first appearance of the symptoms she had quite recovered.

CASE III. *Delirium of inanition*.—A clerk in an accountant's office, aged twenty-six years, single, was brought to me by his father in May, 1891. I was informed that the patient had always been quite well and strong, had never had a day's illness, was steady in his habits and a hard-working, clever man, who had gained the confidence of his employers. He had never had syphilis.

In April last he had a severe attack of influenza, which confined him to his bed for a week. He insisted, however, on getting up and going to the office before his doctor had allowed him to do so, being over-anxious to resume his occupation. His employers, noticing that he seemed very feeble and ill, wished him to go to the country to recruit his strength, but the patient said he was quite well enough to work. His fellow-clerks, however, noticed at once that he was quite a different man; he dawdled over his work, did not seem to understand what he was about, spoke in a foolish manner and made mistakes in letters and accounts. It was noticed that his bedroom, which he formerly used to keep very tidy, was in a fearful state of disorder, all his things being thrown pell-mell about the floor. When walking in the streets, he swayed about and behaved so strangely that he was several times on the point of being given into the charge of the police. He ate practically nothing all this time, and could not sleep. The next day he appeared to be worse; seemed to have lost his memory altogether; accused his fellow-clerks of robbing their employers; said that there were too many cats and dogs about the place, and expressed a fear that he was going to be prosecuted for perjury. The night after, he got out of bed about 2 A.M. and ran for the office, where he created a great disturbance, calling for the police, and shouting that there were thieves in the place. He was brought to me about 10 A.M. the same day, as his people did not know what to do with him. The patient gave a most confused account of what had happened to him during the last few days, was very excited and asked his father repeatedly not to speak so loud, as he did not wish people to know that he was in my house. There was utter incoherence of ideas. When asked to write his name and address and the date of the month, he made several glaring mistakes. During the interview with me he was constantly getting up, walking about the room and sitting down again. His tongue was furred, his breath had a peculiarly offensive odor, the pulse was 140 and extremely feeble, the temperature subnormal, and he nearly fainted away twice during the interview.

I gave him at once a hypodermatic injection of morphine, and prescribed sulphonal at bedtime, ammonium bromide, with digitalis and nux vomica three times a day, and a highly nourishing and easily digestible diet, with four ounces of brandy in the twenty-four hours. Three days afterward the patient had improved so much that he was fit to be taken to the country, where he remained for three months. He made a gradual and satisfactory recovery, and when I saw him last, in October, 1891, he had been quite well, and had regularly attended to his work during the last six weeks.

CASE IV. *Homicidal impulses*.—A broker, aged thirty-three years, married and father of five children, first consulted me in 1880 about hypochondriacal feelings from which he suffered. Under the influence of treatment he improved, and remained fairly well until four years afterward, when he had a more severe attack of melancholia, apparently without any particular cause. After about twelve months, however, the pa-

tient's mind gradually brightened up, he again began to take an interest in life, and resumed business with considerable vigor. He now remained quite free from any mental trouble until December, 1889, when he had a bad attack of grip, with high fever, severe headache and persistent insomnia. He came to see me in February, 1890, and had hardly entered my room when he burst out crying, and said that he was in a dreadful condition, as he constantly felt an almost irresistible impulse to kill his wife and children, and kept praying all day and night that he might not do so. He was often obliged to rush out of the room at meal times, because the sight of knives on the table made him feel as if he were compelled to cut his wife's and children's throats. He was unable to attend to his business, suffered from giddiness and loss of sleep, and had great pain and tenderness in the cranium and the upper portion of the spine. The pulse was feeble, 112, and the temperature 99.8°. There was no appetite, and the bowels were confined; the urine was neutral, 1008, and contained an excess of phosphates. As the patient had on former occasions derived marked benefit from the use of electricity, I gave him at once an application of the constant current to the head, two milliampères for the pre-frontal lobes, five minutes, and one milliampère to cervical sympathetic and bulb, one minute each side. He felt greatly relieved and soothed by this application, and I therefore repeated it on the three following days. I also prescribed strychnine, with bromide of ammonium, and an alterative pill at bedtime. Under the influence of this treatment the patient rapidly recovered his mental balance, and appeared to be quite well again about six weeks afterward. I heard from him a short time ago to the effect that his health had since that time been satisfactory.

CASE V. *General paralysis of the insane; fatal issue.*—In October, 1891, I saw, in consultation with Dr. Brookfield, of Kilburn, a merchant, aged fifty-two years, married, and father of three children, who had been perfectly well until January, 1890, when he had an attack of grip. He recovered well from this, and did not seem to suffer in any way from the effects of it. In April, 1891, he had a second attack, with which he was laid up for three weeks. When he got up again, it was noticed that a great change had taken place in his general condition. He had lost all interest in his business, was indifferent to his family, was disinclined to talk, and only wanted to be left alone. He likewise showed difficulty in walking, standing, and the use of his hands. He often seemed to be quite absent and silly. In August last he had an attack of left hemiplegia, and, after that, he deteriorated still more rapidly. When I saw him he had for many days been in a state of coma, from which he rallied occasionally, soon to relapse again into it. He was then quite paralyzed, unable to move a limb or even to put out his tongue, and had neurolytic bronchitis, with râles all over the chest, sixty-four inspirations, a pulse of 134, and a temperature of 103.5°. He was, in effect, in *articulo mortis*, and died a few hours after my visit.

CASE VI. *Incipient general paralysis of the insane; recovery.*—In October last I saw, in consultation with Dr. Montagu Miller, a merchant, aged fifty-one years, married, and father of three children, who had been in good health until he had influenza in April, 1891. He had never had syphilis, and always lived temperately. He had no catarrh with the grip, but simply nervous symptoms. Ever since then he had

not been the same man that he was before, as he had lapses of memory, worried over trifling matters of business which had formerly left him quite unconcerned, and took undue trouble with things that did not require his attention. He had recently had some domestic trouble, to which, however, he did not appear to attach much importance. About ten days ago he was suddenly taken with epileptiform seizures, affecting one side of the body, and accompanied with short losses of consciousness. He seemed confused, slept either very heavily or not at all, and had lost power in the arms and legs.

During my interview with him he was highly emotional, being several times unable to restrain his tears. His memory was much affected, as he had a difficulty in telling me his age. His manner was altogether peculiar. Cranial percussion did not show any localized tenderness, but he complained of headache, and peculiarly heavy feelings in his head. He told me that when he had attempted to attend to business, he became so excited and confused that he was unable to go on with it. He had great difficulty in composing letters, which were written in a curiously round-about and unbusiness-like style. The discs were normal. There was awkwardness in the use of his fingers, but the muscular force, as measured by the dynamometer, was fairly good—110° left, and 140° right hand. What attracted particular attention, however, was a curiously shuffling gait, which had only been noticed during the last few days, and which was exactly like that seen in some forms of general paralysis. He had great difficulty in raising his feet from the ground, and walked by pushing one foot after another along the floor. The knee-jerk was exaggerated on both sides; and eliciting it in the ordinary manner, and without any undue force, sent such a thrill through the whole body that the patient very nearly fainted away, and had to be laid flat on a couch. He said that it resounded all through his head, and he trembled all over, more especially with his right hand, for about five minutes.

I advised perfect rest, change of scene, and mercury, with large doses of iodide of potassium. Under the influence of this treatment, the patient improved wonderfully, and when I saw him again about a month afterward, most of the symptoms above related had disappeared. Eliciting the knee-jerk, however, still caused a startling effect; the patient felt "queer" all over, had a sort of spasm in his throat, and shook like a leaf; and this effect lasted nearly three days. Since then he has made such good progress as to enable him to resume his business.

The cases which I have just related may naturally be grouped into four separate classes, viz.: First, neurasthenia, hypochondriasis, and melancholia; second, acute asthenic delirium, delirium of collapse, or as I prefer to call it, delirium of inanition; third, mental affections, grafted upon preëxisting neuroses; and fourth, general paralysis of the insane. Kraepelin,¹ Ladame,² and others have distinguished only three different groups, much on the same lines as the three first mentioned, but the cases of general paralysis which I have related do not fit into

¹ Kraepelin; "Ueber Psychosen nach Influenza," Deutsche med. Wochenschrift, 1890, No. 11.

² Ladame: "Des Psychoses après l'Influenza," Annales medico-psychol, Paris, 1890, p. 20.

any of their categories, and require an extension of the classification hitherto proposed.

Class 1. The first and apparently most frequent class is that of which Cases I. and II. are instances, and may be characterized as simple mental depression, ranging from ordinary neurasthenia to the more severe forms of hypochondriasis, melancholia, and depressive insanity. The patient is incapacitated from attending to his ordinary occupations, and falls into a gloomy habit of thought, in which dark foreboding of some impending disaster, the apprehension of an incurable disease, which is about to carry him off, or the delusion that he has committed some fearful crime, for which he is going to be imprisoned, tried, and executed, play a leading part. He considers himself disgraced or financially ruined, contemplates suicide as the only escape from his imaginary troubles, and complains that his persecutors do not leave him in peace for a single instant.

To the cases which I have myself described I will now add a few more from the practice of other observers :

Leledy¹ relates the case of a coachman, aged thirty-five years, who had no hereditary predisposition, but was of a somewhat morose and petulant temper. He was not addicted to drink, and his mind had been unaffected before an attack of grip, which was of a mild character. During convalescence he was unable to sleep, and thought that everyone was against him ; he expressed great fear of death, more especially when night came on ; he then insisted that the whole family should come to his bedside, and made a sort of confession to them. He threatened those persons who endeavored to prevent him from doing foolish things, drank his own urine, and deplored the loss of power from which he suffered. In about three weeks the insomnia left him, and he then began to improve. He presently resumed his occupation, and eventually got quite well.

Another instructive case of this kind is reported by Ladame :²

A lady, aged forty-four years, who had a neurotic history, had grip at the end of December, 1889. The feverish attack was moderate, lasting hardly two days, but when it was over there was anorexia, insomnia, and languor. Soon afterward symptoms of melancholia were noticed. She took no interest in her surroundings, seemed to have lost all affection for her husband and only son, said that she was lost, refused food, and would not get out of bed, saying that she was too weak. She lost flesh, and sent for her solicitor in order to make her will. This condition, with some variations for better and worse, lasted about two months. The patient then left her bed, began to eat with a good appetite, and improved rapidly.

Mairet³ has given the case of a woman, aged thirty-eight years, in whom the most careful inquiry about her past life, as well as the health of her relations, did not yield the slightest evidence that she or they had ever had any neurotic symptom or predisposition. She had an attack of grip in January, 1890, which was not very severe, and from which she had nearly recovered when, on the seventh or eighth day of the disease, her mind became affected.

¹ Leledy : *La Grippe et l'Aliénation mentale*. Paris, 1891.

² Ladame : "Des Psychoses après l'Influenza," *Annales medico-psychol.*, Paris, 1890, p. 20.

³ Mairet : "Grippe et Aliénation mentale," *Montpellier Medical*, Mai et Juin, 1890.

There was a quiet kind of delirium, without excitement, and with melancholy ideas. Her family was ruined, they would have nothing to live upon, and were lost. A few days afterward excitement set in, and ten days after the beginning of the delirium she had an apoplectic attack with loss of consciousness. When she came to, however, there was no paralysis, except a slight deviation of the mouth. In the meantime the melancholia continued; the patient accused herself of being the cause of all the deaths which had taken place from influenza in her parish. She complained that her husband was putting lucifer matches into her drink in order to poison her; she was going to be put into prison; she saw nothing but spiders about the place; at other times she was surrounded by water and wanted to drown herself; or all objects and persons near her appeared to be turned topsy-turvy. She was now admitted into the asylum, where she did not get better; on the contrary, the sensorial perversion became more marked. She was quite dazed, and did not know where she was or what year it was, etc.

Snell¹ mentions the case of a girl, aged eighteen years, in whom melancholia developed almost directly after the attack of grip was over. She was going to be admitted into an asylum, when she committed suicide by hanging herself.

Martin, quoted by Ladame,² has described the case of a coffee-house keeper, aged forty-five years, of temperate and regulate habits, happy at home, and in easy circumstances, who was in good health when he had an attack of grip, of medium intensity, which lasted three days. He did not feel well afterward, but refused to see a doctor, was sad and melancholy, and complained of great lassitude. He several times spoke of being tired of life, and about a fortnight after the attack was over, cut his throat with a pocket-knife, severing the windpipe and the carotid.

In this case there was hereditary predisposition, as a brother of the patient had previously committed suicide.

Psychoses of the same character as those described are apt to occur after other infectious diseases of somewhat longer duration, more particularly after typhoid and rheumatic fever, and whooping-cough.

Class 2. The second group of post-grippal psychoses, of which Case III. is a representative, is characterized by excitement rather than by depression. The symptoms are apt to occur either immediately after a crisis, when there has been a sudden considerable fall of temperature, and profuse perspiration, or within a week or two after the fever has subsided, during which time the patient has generally suffered from insomnia, prostration, and loss of appetite. There is confusion of ideas, delirium which may be of a maniacal character, and an abundant crop of delusions. The delirium habitually lasts from a few days to a fortnight, after which the patient either recovers, or gets into a condition of melancholia, or even dementia, which may continue from a few weeks to several months. These cases are therefore analogous to those which Hermann Weber³ has so ably described as those of acute insanity, or

¹ Snell: "Influenza," *Allg. Zeitschrift für Psychiatrie*, Berlin, 1890, p. 418.

² Ladame: "Des Psychoses après l'Influenza," *Annales medico-psychol.*, Paris, 1890, p. 20.

³ Hermann Weber: "On Delirium or Acute Insanity during the Decline of Acute Diseases, especially the Delirium of Collapse," *Med.-Chir. Soc. Trans.*, London, 1865, vol. xlviii, p. 135.

delirium of collapse, and which are seen chiefly after infectious fevers of short duration, such as pneumonia, measles, scarlet fever, smallpox, and the puerperal state. There are several forms of them, characterized by rapid deterioration of the mental faculties, or primary dementia, or confusion with hallucinations, etc. The condition is always, however, owing to sudden exhaustion of brain power from excessive destruction of the unoxidized albumin of the cerebral tissue, and for this reason I consider the term "delirium of inanition" to be the most appropriate. The inanition is, indeed, sometimes so great as to lead to a fatal issue, the patients dying with the symptoms of sudden cardiac failure and collapse.

Mairet¹ has given the case of a gentleman, aged fifty years, who had never shown any trace of neurotic predisposition throughout his previous life, but whose mother had had softening of the brain and dementia when she was fifty years of age. This patient had a slight attack of grip in January, 1890, without much fever or localized symptoms; he was, however, twelve days in bed, after which the fever was gone, and only some anorexia remained. Five days afterward, his doctor allowed him to go out, but he soon returned home, complained of a severe headache, and had almost immediately afterward an attack of violent delirium, with hallucinations and excitement. He exclaimed that he had ruined himself and his family; he saw people behind his bed-curtains, who threatened to murder him; and in order to escape from them he attempted to jump out of the window. He struggled with his attendants, and had no sleep at all. He was confused, the speech was thick, and there was paresis of the bladder. The prognosis appeared, therefore, somewhat grave; but after eight or ten days the delirium subsided, the apparent state of dementia and the paresis of the bladder disappeared, and about three weeks after the beginning of the affection, the patient was quite well again.

A somewhat analogous case has been related by Schmitz.² The patient was a shoemaker, aged twenty-four years, in whose family there was no history whatever of mental or nervous diseases. He had always been in good health himself, except that in consequence of an accident, when sixteen years of age, his left foot had to be amputated, and that he occasionally felt pain in the stump. In January, 1890, all the inhabitants of the house in which he lived had influenza. He had it himself slightly, complaining chiefly of headache, loss of appetite, and insomnia; but there was little or no fever or prostration. Five days afterward he commenced having visual and auditory hallucinations. He complained that there were two men and a woman standing at the window, who wanted to drown him. He could not sleep, was constantly jumping out of bed, bolted all the doors, and listened intently, sometimes in one place, and sometimes in another. Next morning he seemed better, but became again more restless toward evening. He went to a friend to borrow a pitchfork, after which he was locked in a room; he then jumped out of the window, and stuck the pitchfork repeatedly into the street-door, saying that he wanted to stab the wretches. On another occasion he took up a bread-knife and ran along the street, looking for his persecutors, telling a boy whom he met to take himself off, as otherwise he would be dead to-morrow. The whole neighborhood eventually became alarmed, and he was sent to an asylum; he soon recovered there, and was well enough to be discharged at the end of February.

¹ Mairet: "Grippe et Aliénation mentale," Montpellier Medical, Mai et Juin, 1890.

² Schmitz: "Influenza und Geisteskrankheiten," Allg. Zeitschrift für Psychiatric, Berlin, 1890, p. 238.

Leledy¹ has seen the case of a priest, aged forty-six years, without any hereditary stain, who was generally in fair health, but habitually suffered from impaired digestion. He had influenza with rather severe bronchitis, insomnia, and loss of appetite. On the fifteenth day he began to be excited, and had grand delusions. He had been made a cardinal, and then pope. He soon became violent, caressed the sisters who nursed him, and afterward kicked them, boxed their ears, spat into their faces, and threatened to kill them.

The agitation increased as time went on, and he eventually escaped from his room, ran, only half-dressed, into church, where another priest was celebrating, mounted the pulpit and shouted to the congregation that the celebrant was not doing the work properly, called upon them to receive his own blessing, and then threw chairs and benches at their heads. He also gave expression to erotic feelings, and made indecent proposals to the sisters who nursed him. When he was taken to the asylum, he smashed the windows of the carriage, shouted, screamed, foamed at the mouth, threatened the people with excommunication, said that he was the representative of heaven on earth, and endeavored to kiss and bite alternately. This delirium continued for four days more; the patient then became calmer, and a month after the beginning of the mental affection he was well enough to be discharged and to go to the country to recuperate.

The result is, however, not always so satisfactory as it was in the foregoing cases.

Thus, Mispelbaum,² has seen a youth aged sixteen years, whose mother had been, when she was quite young, for three months in an asylum, but who had since then been quite well. He had an attack of grip at the end of December, 1889; was in bed for two days, then got up, and felt, about a week afterward, well enough to resume his occupation as a mason's apprentice. Five days after he had gone back to work, however, the first symptoms of mental confusion occurred. He thought another lad was lying in his bed; he did not recognize his friends, or called them by wrong names; could not swallow, did not call for food, lay in bed with his eyes closed, and passed the excreta under him. He appeared terrified, cried and sobbed, and said he had perjured himself. He also had hallucinations of vision, vertigo, and vomiting. He gradually improved, but was not well toward the end of March, and his faculties seemed to have suffered to such an extent that chronic dementia was feared.

Bartels³ has met with a case which shows that the delirium of inanition may also ensue after influenza in those previously insane. His patient was an old lunatic, who had been habitually full of stationary delusions. After an attack of influenza, however, he got into a state of the utmost anxiety and confusion, which appeared to be caused by hallucinations, became prostrate, and died. The autopsy showed chronic pachymeningitis and leptomeningitis.

Class 3. The third group of post-grippal psychoses includes those cases in which grip forms, as it were, only the accidental exciting cause of a mental affection in persons who are strongly predisposed to the latter, or have already suffered from previous attacks of insanity or allied neuroses. In such persons the psychosis does not assume the clinical features of those mental affections which are particularly apt to occur after other infectious diseases. Thus, there may be a sudden attack of delirium

¹ Leledy: *La Grippe et l'Aliénation mentale*, Paris, 1891.

² Mispelbaum: "Ueber Psychosen nach Influenza," *Allg. Zeit. f. Psych.*, 1890, p. 127.

³ Bartels: "Einfluss der Influenza auf Geisteskrankheiten," *Neurol. Centralbl.*, 1890, No. 6.

tremens in an alcoholized person, or acute mania in one who has previously had it, etc. The attack of influenza, therefore, only forms, as it were, the last link in a chain of events tending to cause mental disturbance which might also have broken out in consequence of any other exciting cause, or indeed without any such cause at all. Indeed, the attack of grip in such cases appears to be the last straw that breaks the camel's back. The character of these psychoses is, therefore, not so much determined by the special infectious disease as by the individual peculiarity of the patient, and may for this reason assume the most varied characters.

Case IV., which is a representative of this class, was one in which homicidal impulses appeared after grip.

Maunoir, quoted by Ladame,¹ mentions the case of a medical student, aged twenty-six years, who had previously suffered from depression and other symptoms of mental disturbance, and after an attack of influenza, developed a suicidal tendency. He told his friends that he preferred dividing the carotids to any other form of suicide. The day before his death he spent the evening with his friends, was very animated in conversation, and borrowed books from them. The following morning he cut his throat.

The newspapers of the time² reported the case of a young man, aged twenty-two years, who had generally behaved quite properly, but was of a taciturn disposition, and probably hereditarily predisposed. He had influenza badly, and his sister had just died of the same complaint. Apparently under the influence of these exciting causes, he suddenly killed his mother, with whom he had been talking quietly only a minute before, with a single blow of a hatchet. He then took the hatchet back to the place from where he had taken it, and when the neighbors, attracted by the noise, rushed into the room, he walked about quite unconcernedly, as if nothing had happened. He was taken in charge, but did not seem to realize the situation.

Leledy³ mentions the case of a woman aged thirty-five years, whose father was an habitual drunkard and had been insane; the mother had died of heart disease. She often suffered from headaches, and had very pronounced religious views. When her father died she expected to receive a considerable sum of money, but it turned out that the will had been made in favor of her brother. She was very much annoyed at this, and a change in her manner was noticed; she became morose, was apt to cry, and wanted to be left alone. She had grip in January, 1890, of a mild type, and got apparently well over it. Soon afterward, however, she became excited and incoherent, left her home and wandered about the country. Violence and grand delusions soon became developed. When admitted into the asylum, she boxed her husband's ears, shouted that she had been robbed of her money and of her patent of nobility; she was a countess, and wanted her dresses and jewels back. She struck the sisters, servants, and other patients, and endeavored to bite, tore up her clothes, and had no sleep. From time to time there was a period of relative calm, which, however, did not last. She soon became so violent again that she had to be isolated; even in the intervals of quiet she continued incoherent, unduly talkative, and full of delusions.

Kraepelin⁴ has described the case of a farmer's son, aged twenty years,

¹ Ladame: "Des Psychoses après l'Influenza," *Annales medico-psychol.* Paris, 1890, p. 20.

² *Deutsche Reichszeitung*, Jan. 29, 1890.

³ Leledy: *La Grippe et l'Aliénation mentale.* Paris, 1891.

⁴ Kraepelin: "Ueber Psychosen nach Influenza," *Deutsche med. Wochenschrift*, 1890, No. 11.

whose brother was subject to stammering and who had two cousins who were insane. He had for years past suffered from a form of spasmodic torticollis; and expressed odd ideas about his being called upon to restore peace in his family. He was laid up with influenza for a week and then resumed work, but had a relapse, when he began to chatter away all day long; was very restless, irritable, conceited, read aloud from the Bible, and made speeches. After a time, however, he quieted down and resumed work.

The same observer has in another case seen a sudden development of paralysis, with aphasia and impaired memory, hypochondriacal and grand delusions, which had until then been latent (?), and a young epileptic in whom heavy lethargy came on after influenza.

Snell¹ mentions the case of a factory girl aged seventeen years, who had been admitted into the asylum of Hildesheim for melancholia. The latter condition was after a time followed by a state of merry excitement; but eventually the girl quieted down, was convalescent and fit for discharge, when she was seized with influenza, from which she made an apparently good recovery. About a month afterward, however, malaise with vomiting set in, and was followed by a most severe form of mania. The state of this patient was greatly aggravated by the intercurrent attack of grip.

Class 4. The fourth and last class of post-grippal psychoses consists of cases of general paralysis of the insane, where no doubt can exist that grave degenerative lesions of the cortex and the cerebral membranes are present. I much regret that I could not obtain a post-mortem examination in Case V., in which coarse lesions similar to those habitually found in general paralysis would unquestionably have been discovered. That case was remarkable by the exceedingly rapid development of grave symptoms, pointing to organic brain disease, and ran an unusually quick course, carrying the patient off in less than six months, while where general paralysis is owing to syphilis and other causes, the duration of the disease is habitually at least two years, and often very much longer. The grippo-toxine is therefore shown to be in certain cases a poison of greater virulence than the syphilitic toxine.

I confess that I do not understand what Kraepelin means by saying (*loc. cit.*) that there had been in one of his cases a sudden development of paralysis with impaired language and hypochondriacal and grand delusions, which had been *latent* until influenza brought them out. I have never seen latent paralysis and aphasia, and I suspect that the case alluded to was similar to my cases of general paralysis (V. and VI.).

The successful result in Case VI. shows that energetic treatment may be followed by recovery even where structural disease has already commenced.

PATHOGENESIS.—Let us now inquire how these post-grippal psychoses, the clinical features of which I have just described, originate.

I will consider—first, the influence of the fever; second, that of the grippo-toxine; and third, the individual susceptibility of the patient.

1. *The fever.* That a rise in the temperature of the blood must have an important influence on the nutrition, and consequently on the func-

¹ Snell: "Influenza," *Allg. Zeitschrift für Psychiatrie*. Berlin, 1890, p. 418.

tions of the brain-cells, appears self-evident. Increased heat constitutes an irritant for all nerve-tissues. A frog's leg which is artificially heated by a few degrees, is at first irritated, so that slight stimuli cause excessive responses, and afterward paralyzed, when stimulation has no longer any influence at all.

Clinically, the same effect is seen in heat-stroke and the hyperpyrexia of rheumatic fever, and also in such infectious fevers as pneumonia, intermittent fever, and the acute exanthemata, where the nerve-centres experience a more or less sudden elevation of temperature, amounting perhaps to 4° or 5° . The consequence of this is increased oxidation of the uncombined albumin of the brain; and such a chemical change must, of itself, lead to irritation, followed by depression.

There is as yet very little accurate information about the more intimate changes caused in the metabolism of the brain and the body by the fever-heat; and the most recent researches of Loewy¹ have thrown no further light on this point, except than to make it clear that the destruction of albumin is invariably increased in fever, while the destruction of fat is rather diminished, except in cases where accidental agencies are active, more especially increased muscular action, when the oxidation of fat may also be more or less augmented. Anyhow, it is evident that, when the supply of unoxidized albumin in the brain is exhausted, the mental faculties must become impaired.

A factor which has to be considered in addition to the fever-heat is the acceleration of the heart's action, which coexists with the beginning and acme of the fever, and which causes of itself an active hyperæmia of the brain. A mechanical agency is thus added to the chemical one. An unduly large amount of overheated blood is supplied to the brain within a given period, thus increasing the irritation. That there is really active hyperæmia of the brain during fever is shown by the clinical symptoms of fulness in the head, excitement, restlessness, insomnia, undue sensitiveness to light and sounds, by the examination of the fundus of the eye, and the beneficial results of a depleting treatment. After a time, however, there is a failure of the heart's power, with or without a fall of temperature; and the necessary consequence of this is passive congestion in the cerebral and meningeal veins, which, in its turn, leads to anæmia and impaired nutrition of the cerebral substance, and in severe cases to œdema of the brain.

The clinical symptoms corresponding to this condition are light-headedness, a dazed state, which may be followed by maniacal excitement and violent delirium, and may end in coma and death.

2. *Grippo-toxine*. While, therefore, the fever-heat and the unduly

¹ Loewy: "Stoffwechsel-untersuchungen im Fieber," etc., Virchow's Archiv, Berlin, 1891, vol. cxxvi, p. 218.

violent cardiac action undoubtedly tend to cause impaired nutrition of the brain substance, there is another factor which, in my opinion, has an infinitely more powerful influence in that direction, and that is the presence in the blood of the grippo-toxine. That this poison affects the brain injuriously of itself is shown by the circumstance that in grip, as well as in some other infectious fevers—such as smallpox, typhoid, intermittent and scarlet fevers—delirium may be the first symptom of the illness, before the temperature of the blood has risen, or the heart's action has become accelerated.

An interesting case of this kind has been recorded by Ewald:¹

A boy,² aged seven years, appeared to be in his usual health when one morning, instead of going to school, he went to a railway station, and took a seat in a carriage, saying that he intended to go to Leipzig, where his father lived. He was removed from the train, but appeared to have forgotten his name and address. He was eventually taken home and appeared then quite wild. Fever and other signs of influenza presently supervened, and the boy continued delirious for several days. A crisis then occurred, and he recovered his mental balance.

Joffroy³ has described the case of a man, in whom grip commenced with violent delirium, in which the patient did not recognize his friends, sang and shouted, and was apprehensive of being murdered. Symptoms of grip after a time became developed, and the delirium continued for seventeen days longer. The patient then regained consciousness, and eventually made a good recovery.

That the fever has much less to do with the production of post-grippal psychoses than the special toxine of the malady is also shown by the circumstance that it is generally short, and in many cases insignificant. The temperature often does not exceed 101° or 102°, and continues at this rate only for a day or two, so that the case would almost appear like one of simple febricula; yet the prostration of mental and bodily strength which follows is so profound as to be quite inexplicable except on the assumption of deterioration of the nerve-centres by the grippo-toxine. Indeed, the degree of fever bears often no relation whatever to the gravity of the mental affections following in its wake. We see in this an analogy with syphilis, where the primary symptoms may be so slight that they attract very little attention, and yet are followed by severe secondary and tertiary manifestations. The deleterious effects of grippo-toxine do not cease with the fever, and I contend that *this virus is the principal agent in the causation of the psychoses which are apt to occur after grip.*

3. *Individual predisposition.* I have now to discuss one of the most

¹ Ewald: "Ueber Influenza," Deutsche med. Wochenschr., Jan. 23, 1890.

² This boy has been curiously enough changed into a girl by Leledy (loc. cit., p. 90), who speaks of him as "une petite fille," and employs the terms "elle" and "la" throughout the relation of the case.

³ Joffroy: "Délire avec Agitation maniaque dans l'Influenza," Mercredi Médical, 1890, No. 13.

difficult points in the pathogenesis of post-grippal psychoses, and regret to find myself here at issue with almost all authors who have written on this subject. Up to the present time it has been generally assumed that grip alone is not sufficient to cause any psychoses, and that it is necessary for the production of these latter that there should be an hereditary or acquired neurotic predisposition in those who are affected by these troubles. Kraepelin¹ lays this down as an axiom in the most unequivocal terms. He states plainly that in the production of post-grippal psychoses there are invariably other active causes at work besides the influenza, and that the latter alone is insufficient to cause acute insanity in a normally constituted person. In his opinion the influence of grip is altogether a factor of little importance, while predisposition or other noxious agents—such as anæmia, chronic lung disease, gastric catarrh, cardiac affections, the puerperal state, and finally depressing emotions occurring after the feverish attack—must be held responsible for the outbreak of insanity in the cases in question.

Ladame² absolutely agrees with Kraepelin on this point, and states that individual predisposition, hereditary or acquired, plays the principal part in these affections. He says: "On trouve toujours des causes prédisposantes à la folie qui suit l'influenza" (*loc. cit.*, p. 30), and "l'influenza à elle seule ne suffit jamais à provoquer la folie" (*loc. cit.*, p. 40). Again, Leledy³ states that "le rôle joué par la grippe peut être variable. Tantôt cause occasionelle, elle peut être ailleurs cause déterminante, adjuvante. La s'arrête le rôle étiologique de la grippe qui ne saurait être regardée comme cause essentielle, cause pathogène. Il existe toujours une prédisposition innée ou acquisé." The same opinion is expressed by Van Deventer,⁴ Bidon,⁵ and all other authors with whose writings I am acquainted.⁶

As for myself, I am utterly opposed to the theory which assigns the determining part in the causation of post-grippal psychoses to a neurotic predisposition of those in whom they have become developed; and I

¹ Kraepelin: "Über Psychosen nach Influenza," Deutsche med. Wochenschrift, 1890, No. 11.

² Ladame: "Des Psychoses après l'Influenza," Annales medico-psychol., Paris, 1890, p. 20.

³ Leledy: La Grippe et l'Aliénation mentale. Paris, 1891.

⁴ Van Deventer: "Ueber Influenza verbunden mit Geisteskrankheiten," Centralbl. für Nervenheilk., Mai, 1890.

⁵ Bidon: "Etude clinique sur l'Action de la Grippe sur le Système nerveux," Revue de Médecine, Paris, May and Nov., 1891.

⁶ The only exception to this would appear to be Mairret, who is quoted by Leledy as saying that influenza may by itself and without any other cause lead to insanity. I regret to say that I have been unable to procure Mairret's paper, and am therefore unacquainted with his line of argument. What I know of it is derived from quotations given by Leledy.

now proceed to give my reasons for the contrary opinion at which I have arrived.

In five out of the six cases which I have described above, the most careful inquiry did not elicit any predisposition, either in the patients themselves or their families. Since then I have perused the reports of other authors, and have found that out of 107 cases, in which the history of the patients has been mentioned, there was a neurotic predisposition in 67, and no predisposition in 30. This, when expressed in percentages, means that 62.8 were predisposed, and 37.2 were not so. Predisposition, therefore, although undoubtedly an important adjuvant in the production of these psychoses, is plainly shown not to be their exclusive etiological factor. Now the question remains to be answered, why, when so many suffer from grip, comparatively so few afterward become mentally afflicted.

Two modes of accounting for this fact have suggested themselves to me. In the first place, I consider it consonant with the results of clinical observation to say that *idiosyncrasy*—which is well known to exist more or less in all of us, not only with regard to medicines and poisons but also to articles of food—is shown in a peculiarly striking manner by the patient's response to the action of grippo-toxine in the system. There is probably no disease, and certainly no infectious malady, in which the symptoms are so extremely variable as they are found to be in influenza. Indeed, hardly a single case of it is like another. The fever, for instance, does not show any such constant curve as we see in typhoid and intermittent, but is throughout characterized by the highest degree of variability which it is possible to conceive. While in one case it may last no longer than twelve hours, it is in another protracted over three weeks. Again, the fever-heat varies in different cases from 100° to 111°, and there is the greatest irregularity in morning and evening temperatures. The heat is often greater in the morning than at any other part of the day, and sudden changes take place within a few hours to which we are not accustomed in other febrile diseases. The same holds good for other symptoms, and it is indeed the unexpected which constantly happens in grip. While in some cases headache forms the most prominent symptom, pain in the loins, or delirium, or giddiness, or vomiting, or cough, or prostration, do so in others. How are we to account for this except by assuming that the influence of individual idiosyncrasy is carried to a very high pitch in the response of patients to the action of grippo-toxine? Idiosyncrasy, however, is an entirely different thing from a special morbid tendency, and is known to exist in all those who otherwise are in a normal state. Without idiosyncrasies we should not be individuals, and idiosyncrasy moves within physiological lines without being tainted by pathological tendencies. I therefore contend that simply from the effects of idiosyncrasy, persons may

be affected with mental disorder from the effects of grippo-toxine without there being any neurotic tendency either in themselves or their ancestors. As a counterpart to this I may mention that I have seen a considerable number of intensely neurotic persons, who have had not only one but two, and some of them even three attacks of grip, but apparently without any such special idiosyncrasy, and who have not been troubled after convalescence either with psychoses or with any other nerve diseases.

Another way of accounting for this phenomenon has suggested itself to me, which appears *prima facie* plausible, but is at present not susceptible of proof, owing to our ignorance of the chemical constitution of grippo-toxine and its congeners. I will therefore here content myself with asking the question, Whether grippo-toxine, and indeed all other toxins, are invariably of the same composition, or whether there are different degrees and varieties of toxic power in the poisons formed by the same bacteria? It is easy to imagine that the same species of bacteria may originate poisons of different strength or qualities, according to the peculiarity of the soil in which they breed or their own peculiar inherent vitality at the time they infest the system. I therefore throw out the suggestion that in cases where psychoses follow the feverish attack, *a toxine of specially deleterious influence upon the gray matter of the cortex may have been formed in the system.*

This leads me to discuss another point on which I cannot agree with others who have written on the same subject. Is there anything specific or characteristic in post-grippal psychoses which does not occur in other infectious fevers? Kraepelin,¹ Ladame,² and others express the opinion that there is not, and that grip stands in this respect on the same level with measles and other infectious diseases. I think that this opinion has been given without due consideration of the facts of the case, and contend that there are peculiarities in the appearance and nature of the post-grippal psychoses which are not found in other post-febrile mental affections.

With regard to this, I beg to submit the following considerations:

1. The *number of cases* of psychoses observed after grip is far greater than that seen after any other infectious diseases. This might at first sight be accounted for by the circumstance that influenza occurs rather as a pandemic than as an epidemic, and by assuming that, as so many more persons suffer from grip than from other fevers, the number of mental cases is inevitably swelled; but an instant's reflection will show

¹ Kraepelin: "Ueber Psychosen nach Influenza," Deutsche med. Wochenschrift, 1890, No. 11.

² Ladame: "Des Psychoses après l'Influenza," Annales medico-psychol., Paris, 1890, p. 20.

that such an argument is untenable. To take only one other infectious disease, it is well known that measles affects habitually the entire population in the course of years, while grip has rarely affected more than 60 per cent. of the people, yet psychoses after measles are very rare. Seeing, therefore, the far greater liability to psychoses after influenza, I contend that the grippo-toxine has a more prejudicial influence on the brain than other morbid poisons. This conclusion is well supported by the argument which I have advanced elsewhere,¹ showing that grippo-toxine has a special affinity for the medulla oblongata, and that by irritating that organ it causes a variety of remote effects in other portions of the nervous system.

2. There is a *much greater variety* of psychoses observed after grip than is met with after other fevers. We have seen that the first class of these maladies, which comprises cases of neurasthenia, hypochondriasis and melancholia, is the same as that which is seen after infectious diseases of comparatively long duration, such as typhoid and rheumatic fever and whooping-cough; while the second class, which comprises cases of delirium, of inanition, and analogous troubles, is the same as that seen after comparatively short fevers, such as pneumonia, the acute exanthemata, and the puerperal state. While, therefore, in other infectious diseases only a limited variety of psychoses is apt to occur, we have in influenza, on the contrary, not only cases of both these classes indiscriminately, but also such of any other form of mental disease occurring in those who are highly predisposed to them, or who have already suffered from similar affections; and finally, a peculiarly rapid—I might almost say galloping—form of general paralysis of the insane.

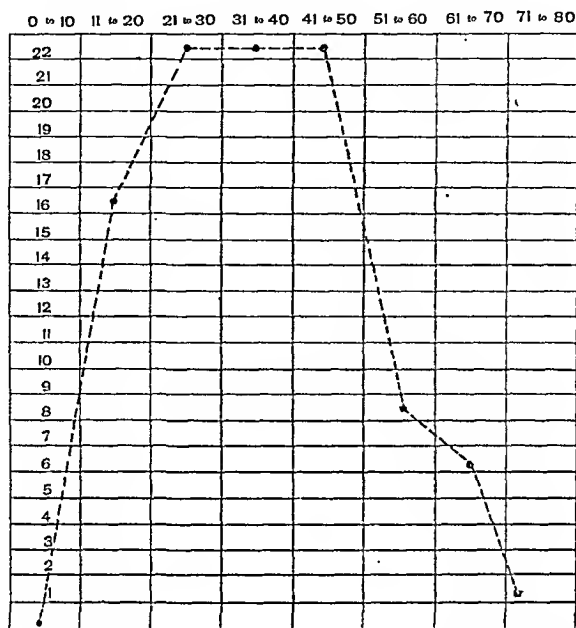
Such an assembly of different kinds of mental affections is not seen after any other infectious fever, and I therefore consider myself justified in stating that grippo-toxine has a more specifically noxious influence upon the nutrition of the cortex than other morbid poisons.

It remains for me to consider the influence of *sex* and *age* on the occurrence of these maladies. In 96 cases in which the ages of the patients have been noted, I have found that there were—

0 cases between	.	.	.	.	.	1 and 10 years.
16 " "	.	.	.	.	.	11 " 20 "
22 " "	.	.	.	.	.	21 " 30 "
22 " "	.	.	.	.	.	31 " 40 "
22 " "	.	.	.	.	.	41 " 50 "
8 " "	.	.	.	.	.	51 " 60 "
6 " "	.	.	.	.	.	61 " 70 "
1 " "	.	.	.	.	.	70 " 80 "

¹ Althaus: "On the Pathology of Influenza, with Special Reference to its Neurotic Character," *Lancet*, Nov. 21 and 28, 1891.

The ages between twenty-one and fifty, therefore, furnish by far the largest percentage, being 68.7 per cent. of the entire number.



Curve showing the ages of ninety-six patients who suffered from post-grippal psychoses.

The sex of the patients has been noticed in a much larger number of cases, viz., 166. Amongst these there were 96 males and 70 females, showing a percentage of 57.8 for males, and of 42.2 for females. The male sex is therefore more predisposed to post-grippal psychoses than the female.

Is any mental affection ever cured by a feverish attack of influenza? Cases of this kind have been reported by Van Deventer,¹ Helweg,² and Metz.³ The latter relates the case of a laborer aged thirty-three years, married, who was admitted into the asylum of Brake in February, 1889, having threatened to shoot his wife, whom he suspected of unfaithfulness, his landlord, and himself. In the asylum he fought an attendant, and was so excited that he had to be isolated. In January, 1890, he was taken with influenza, the feverish attack of which lasted two days. On the second day after the crisis he wrote a perfectly rational letter to his wife, in which he asked her pardon for having insulted her by his suspicions, and explained this by having

¹ Van Deventer: "Ueber Influenza verbunden mit Geisteskrankheiten," Centralbl. für Nervenheilk., Mai, 1890.

² Helweg: "Influenza Wirkungen, etc.," Hospitals Tidende, July, 1890.

³ Metz: "Heilung einer Paranoia nach Influenza," Neurol. Centralbl., 1890, No. 7.

been ill; this illness had lasted until two days ago, when all of a sudden it had ceased. The behavior of the patient after this was perfectly rational, and he was therefore discharged a few weeks afterward. The sudden change coincided with the sudden fall of temperature from 103.2° to 98.8°. Cases like this are difficult to explain, but it seems plausible to assume that the psychosis was connected with an anæmic condition of the brain, to which the hyperæmia of grip acted as a kind of antidote.

PROGNOSIS.—The prognosis of these maladies is fairly favorable. Of my six patients four recovered, apparently permanently, one died, and one recovered temporarily.

The first class, comprising neurasthenia, hypochondriasis, and melancholia, seems to offer, on the whole, the best chances of recovery, the mental disturbance being mostly of a comparatively slight character. There is, however, the risk of the patient committing suicide when in a state of melancholia, as happened in Snell's and Martin's cases which I have mentioned above.

The second class, comprising delirium of inanition, is not quite so favorable in a prognostic point of view, for the physical exhaustion of the patient is much greater and may lead to fatal collapse. There is also the risk of the patients passing into a state of dementia after the period of excitement is over.

For the third class no definite prognosis can be given, as the issue depends chiefly on the individual amount of neurotic predisposition which may exist in a given case. Temporary recovery, however, is not uncommon.

Finally, in the fourth class, the prognosis is thoroughly bad unless the case is energetically treated in the very beginning on a specific plan. Case VI. shows that, if this be done without delay, the lookout of the patient is fairly good.

TREATMENT.—The best rule for treatment is that we should individualize as much as possible, and treat the patient rather than the disease. A nourishing and easily digestible diet is in all cases of the greatest importance. A moderate amount of alcoholic stimulants is useful in most cases where there is loss of appetite and physical debility in addition to mental perversion, and more especially required in the delirium of inanition (Class 2). On the contrary, stimulants of any kind should be prohibited in general paralysis of the insane, where they would unquestionably do harm. Rest, avoidance of excitement, and change of air and scene are amongst our best restoratives where the normal functions of the brain have been impaired. In the delirium of inanition and allied states, where excitement and hallucinations are prevalent, subcutaneous injections of morphine and atropine may be used with considerable advantage. Insomnia should be combated by prolonged warm baths, and, if necessary, by the use of sulphonal and paraldehyde; anorexia by bitter

tonics; general debility by quinine, strychnine, and phosphorus. Where there are symptoms of cardiac debility, as shown by a feeble and rapid pulse, digitalis or strophanthus should be administered. The action of the liver and bowels must be carefully regulated, and alteratives and aperients given when required. Finally, the tone of the nervous centres may be much improved by a judicious application of the constant galvanic current, applied more particularly to the pre-frontal lobes and the medulla oblongata, in doses of one-half to two milliamperes, for between five and ten minutes, either daily or every other day.

A CASE OF PORENCEPHALON IN WHICH TREPHINING WAS DONE FOR THE RELIEF OF LOCAL SYMPTOMS; DEATH FROM SCARLET FEVER.

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AND

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PRELIMINARY REPORT BY DR. LLOYD.

G. P., aged seven years, was admitted to the the Home for Crippled Children, under the writer's care, in October, 1890. He had bilateral spastic hemiplegia of cerebral origin. His right arm especially was spastic and contractured, and the seat of athetoid movements. The legs also were spastic and the patellar reflexes were exaggerated; ankle clonus was well marked on the left side, but not on the right. The child had but little ability to walk; his legs doubled under him, and he had a tendency to rise on his toes. He had internal strabismus. His mental condition was slightly impaired. His general physical condition was good. The muscular development of the legs was perfect. There was no anæsthesia or atrophy. His head was evidently asymmetrical but there were no scars or depressions upon it. Very little history of the case was known, as, for instance, whether the child had had any trauma or any of the eruptive diseases. Nothing was known of his birth or whether he had had convulsions. About one month after admission, however, he had a series of severe convulsions, after which the athetoid movement in the arm was increased. No signal symptom was noted for lack of opportunity to observe the fits. After each convulsion the child's mental faculties were perceptibly weakened. He was dull and listless, with increased athetoid movements in his arms for some hours or days. An examination of the eyes by Dr. de Schweinitz revealed normal pupils with convergent strabismus, the left eye being used preferably for fixation; fundi, with exception of absorption of pigment epithelium of the choroid, showed no abnormalities; high myopia.

The circumference of the child's head was $19\frac{11}{16}$ inches; of the left side $9\frac{9}{16}$ inches; of the right side $11\frac{2}{16}$ inches. The prominent symptoms of the case were thus seen to be a local athetoid movement confined to the right arm, with severe epileptic attacks, increasing for some hours the athetoid condition and impairing the child's mental faculties. After two months' observation, during which time the child's course was progressively downward, a consultation was held with Drs. Willard, Keen, Mills, and Deaver. The general opinion of the consultants was in favor of an exploratory trephining. It was thought that there was possibly some atrophy of brain tissue or thickening of membrane, or possibly a porencephalon. The motive for the operation was to explore and then to relieve, if possible, the local condition which was the immediate cause of the epileptic explosions and of the constant athetoid movements of the arm. It was even thought that the case might possibly be relieved, if in no other way, by the linear operation of Lannelongue. In case, however, of the existence of a porencephalon it was the intention to immediately close the wound. On December 12th the operation was performed by Dr. DeForest Willard, consulting surgeon to the institution, assisted by Drs. Keen and Taylor, in the presence of Drs. Mills, Deaver, Dixon, Davis, and Lloyd.

SURGICAL REPORT BY DR. WILLARD.

Exploratory trephining was proposed with the hope, not of improving the general mental condition, but for the relief of the athetoid movements and of the epilepsy.

Horsley's measurements were used and the fissure-meter employed to mark off the line of the fissure of Rolando. A delicate gouge drill was used through the scalp to mark the upper and lower ends of the fissure upon the skull before making the incision. A large flap with the base downward was raised, and the periosteum stripped off with an elevator. A one and one-half inch trephine was applied one and one-third inches to the left of the median line. As I have found on previous occasions in children, the skull was exceedingly thin, only one and one-half millimetres, and the centre-pin penetrated the dura before the serrated edge of the instrument had made a groove through even one-third of its circumference. On account of the shape of the skull the trephine was therefore abandoned and rongeur forceps were used to gnaw an opening in the bone.

As soon as the pin penetrated the dura a jet of cerebro-spinal fluid spurted through the puncture at each pulsation. When the opening in the skull was of sufficient size to admit the flat-bladed rongeur forceps, pieces were nipped away and the gap was made one and one-half inches wide. A straight incision was made in the dura, and the cerebro-spinal fluid flowed out to the extent of several ounces. A finger introduced into the opening entered a vast cavity without brain substance in any direction. This cavity will be described later by Dr. Lloyd. On looking into this deep well through the clear fluid a dark opening appeared at the bottom, apparently the ventricle, and it was at once seen that a large portion of the cerebrum was absent.

As no further operative procedures were possible it was decided to close and seal the wound. The wound of the dura was approximated with continuous catgut sutures, but it could not be entirely closed

without tearing. The scalp wound was closed with silk sutures without drainage. Iodoform was dusted along the line of the wound and dry sublimate gauze applied with a tight bandage. Thorough antiseptic precautions were taken on the day previous as well as at the time of operation.

Within five hours after the operation the pulse rose to 156, and the temperature to 102°, which could not have been from septic cause. He had but little pain, but vomited two or three times, evidently from the effects of the ether. He slept at intervals during the night, and on the following day the temperature was 103°, and the pulse from 150 to 170, yet he was perfectly conscious and answered questions with his usual intelligence, differing in no perceptible degree from his previous condition.

His temperature remaining high, it was feared at the end of forty-eight hours that there might be some difficulty with the wound. The dressings were accordingly removed and the large flap was found to be entirely united throughout its extent. There had been absolutely no oozing of cerebro-spinal fluid; there was not even a stain on the dressing. The entire serous stain upon the gauze, over the large wound, would probably not exceed a quarter of a drachm; there was no pus nor redness along the incision nor the slightest sign of irritation of any kind. The wound was absolutely clean.

On the fourth day the temperature rose rapidly to 104.2°, accompanied by an eruption over almost the entire surface of his body. This eruption was slightly elevated, with thickening of the derma. A few hours later there was a profuse crop of sudamina, especially on the inner and anterior portion of the thigh and lower abdomen. These miliary papules soon filled with serum and became turbid; the vesicles ruptured within twenty-four hours; this was followed by rapid separation of the epithelium in patches, which epithelium speedily dried *in situ* in large flakes. This eruption was accompanied with a moderate degree of itching. The tongue was polished, red, and strawberry in appearance. The eruption was more prominent upon the lower extremities than upon the breast, face, and neck; in fact, there was but little upon the face. On this day, for the first time, the dressings became soiled by oozing. They were accordingly removed, and the wound was found to be healed throughout its entire extent. The clear spinal fluid oozed through the needle punctures of the scalp, the sutures acting as capillary drains, and conducting the fluid through the tissues. The stitches were accordingly removed in the hope that such action would permit the points to heal. The drainage through these points was probably about two ounces. The wound was absolutely free from inflammatory secretions and was in every respect healthy. Antiseptic dressings were applied and firm pressure made.

On the day following the eruption the vesicles had dried. The eruption was very slightly present on the body, but the epithelium was already beginning to desquamate. The temperature ran to 104.4°, it having sunk at one time on the day previous to 99°. The child was perfectly conscious and as intelligent as before the operation. The tongue presented no change, and there was but little redness of the fossæ. The pulse was 180. Serum again oozed through the dressings. They were again removed, and it was found that the suture openings had all closed, except one in the posterior part of the wound. Intra-cranial pressure

had burst through the weakened cicatrix at one point, which had been perfectly healed, but which was now opened to the extent of one eighth of an inch, through which the serum constantly exuded. The wound was perfectly sweet and aseptic. The serum was slightly tinged with blood. Iodoform collodion was freely applied over several layers of gauze in the attempt to arrest this oozing and prevent this continuous drain of spinal cerebral fluid.

On the seventh day the temperature was 104° F.; the pulse 160. There had been no oozing from the wound since the collodion was applied. The child was perfectly rational and suffered less pain than yesterday. The skin felt dry and harsh. The epithelium desquamated at various points, but was still a little red with slightly elevated points. There had been no marked vomiting; no hardness of the glands of the neck nor indurations behind the jaws. The dressing was not disturbed.

On the eighth day the child was desquamating slightly over the entire surface of the body. The temperature fell to 101°. The child cried at times with pain apparently in his ear. He was more bright, more intelligent, talked in a much better tone of voice and much more intelligently than before the operation. The pulse went down to 136; respiration 24. He fretted and worried, but took food well. The urine contained no albumin; it was heavily loaded with urea.

The intra-cranial pressure was so great that when one opening was closed by collodion, a portion previously healed would be pushed through by the oozing of the cerebro-spinal fluid. No evidences whatever of inflammation were present. The wound was re-sealed and re-dressed. The patient desquamated rapidly and large masses of the epithelium came away. The child steadily failed and lost flesh. Diarrhœa set in with involuntary discharges, and he sank steadily until the nineteenth day with all the symptoms seen in severe grades of diphtheria or scarlet fever. The wound remained perfectly healthy. The child evidently died from the poisoning of scarlet fever.

CLINICAL REPORT AND AUTOPSY BY DR. LLOYD.

The child's first movement on coming out of the ether was with the right or athetoid arm. His condition immediately after the operation was fairly good. He cried loudly. The temperature was good; pulse improving. After the first few hours, however, his condition was never good. His temperature began to rise the same afternoon and reached as high as 102°. His pulse became very rapid; he was restless, slept badly, vomited frequently, and had twitching and jerking movements in the arm. His mental condition, however, was clear and notably better than before the operation. The features of the case, during the remainder of its course, may be briefly summed up in the fact that on the third day after the operation the child was found to have developed a distinct scarlet fever. The surgical condition remained good and continued fairly good to the end. Not a drop of pus or any undue inflammation was observed about the wound. In spite of this favorable surgical condition, however, the child sank lower and lower under the influence of the scarlet-fever poison. A history of this aspect of the case has been published already by the writer and need not be dwelt upon here.¹ The case pursued a somewhat typical course of scarlet

¹ Transactions of the Philadelphia County Medical Society, 1891.

fever. The eruption was characteristic, and marked by but one peculiarity—the presence of sudamina. The sudamina were at first lightly sprinkled over the body, but later they appeared in very thick crops on the lower part of the abdomen and inner part of the thighs. The temperature rose to 104° , even 105° ; the rash persisted for several days, gradually fading out. It covered almost the entire surface, the back especially, which was free from sudamina, showing a typical scarlatinous eruption. The face was much flushed, but around the mouth the white skin was preserved, as is so common in scarlet fever. The throat was flushed but not ulcerated. The cervical glands were little, if at all, involved. The tongue had the characteristic “strawberry” appearance. The patient became slightly more restless and difficult to manage, complaining constantly of pain in the head. The escape of



cerebro-spinal fluid from the needle-wound continued very profuse, but otherwise the wound was healing and was thoroughly aseptic. The patient had vomited several days before the eruption appeared. Desquamation began on the fourth day of the eruption at the place where the sudamina had been thickest, and became general and profuse. The child's condition improved, but only to a certain point. The urine was not albuminous. After the eighth day of the eruption, about twelve days after the operation, the patient sank lower and lower. Desquamation proceeded perfectly and the urine was never albuminous, but the patient passed into a dyscrasia, with variable temperature, involuntary stools, diarrhoea, increasing mental torpor, continued head-pain, dread of light, aversion to food, and restless, disturbed sleep. He failed gradually and died eighteen days after the operation.

The autopsy was made a few hours after death. The brain showed not a trace of septic infection. There was no meningitis. The wound was aseptic although it had not healed at all the needle-points. The body presented nothing of special interest, except the brain, which alone will be described. The left hemisphere presents an immense porencephalon.

This porencephalon involves the Rolandic region. It extends anteriorly beyond the pre-frontal fissure, downward almost or quite to the operculum; backward to include the superior parietal lobule; in other words its area coincides very closely with the distribution of the middle cerebral artery, the superior convolutions of the temporal lobe alone having escaped. Its edges and sides are formed of the convolutions of the brain which have sunk downward and still preserve, especially in the anterior part, their form and relative positions. In the mid-region of the cavity is a large crater-like opening, extending into the lateral ventricle. The membranes at the edge of the cavity are shrivelled up, and form a distinct line or ridge, separating the cavity from the surface of the brain. The gray matter of the mesial aspect of the brain is atrophied and almost destroyed. The gyrus fornicatus is preserved. The left hemisphere is smaller than the right. The measurement from the tip of the frontal to the tip of the occipital lobe shows a difference between the two hemispheres of about three-quarters of an inch. The structures at the base of the brain on the left side are slightly atrophied.

Of the various theories which have been proposed to explain this condition of porencephalon, three only need claim our attention. First of these is the theory of Strümpell of a polioencephalitis analogous to the poliomyelitis of children. The case before us is not explained by this theory, as neither the convolutions nor the membranes covering them present the appearance of having been destroyed or injured by an inflammatory action. Second, the theory of Richter of a basilar kyphosis. According to this theory a defective cartilaginous union, probably of rhachitic origin, causes a twist of the base of the skull, the sella Turcica being thus deflected. The corpus callosum is brought into contact with the falx, which causes atrophy radiating from the corpus callosum into both hemispheres. An obstruction of the veins of Galen is also caused; consequent dilatation of the ventricles and destruction of tissue ensues. This theory may or may not be considered by some to be illustrated in our case. It seems to me, however, that the theory is far-fetched, and that even if it will explain some of these cases, it is not available to explain all of them, especially cases where the porencephalon is unilateral, as in our case. Third: The last, and to my mind the most conclusive theory, is that of vascular disease or injury. Anyone who looks at this brain must be convinced that the left hemisphere has been undermined in the Rolandic region and that its top and sides have caved in. The diseased processes which might produce this condition are several. It might be caused by an obstruction of a large artery of supply. Its location, especially in the area of the middle cerebral artery, lends countenance to this view. Such embolus is not uncommon in several of the infectious diseases of childhood, the most common of which are rheumatism and scarlet fever and the other eruptive diseases. Pneumonia, which is probably infectious in some cases, has been known to be followed by grave cerebral disorders. The pro-

tracted summer diarrhœas of children have also presented occasionally these sequelæ. Venous thrombosis has also been supposed, with reason, to give origin to these serious degenerative and destructive lesions. Finally cerebral hemorrhages have played a very important part in the production of these cerebral palsies of children. The asphyxia of the newborn babe is a potent and frequent cause. This asphyxia, which too often has been ascribed erroneously to pressure upon the head during labor, or to the action of the obstetric forceps, is probably more frequently the result of compression of the placenta in protracted labor, interfering with the proper aëration of the child's blood. In this condition ecchymoses have been observed, not only beneath the membranes of the brain, but also in the pleural cavity and in the capsule of the liver. This compression of the placenta in protracted labor has not been recognized sufficiently as the cause of serious or even fatal injuries to the brain of the newborn. In its practical bearings, which cannot be discussed here, it suggests timely interference, even with instrumental aid, as conservative, rather than dangerous, to the child's brain.

NEPHRITIS AND PYONEPHRITIS COMPLICATING PELVIC INFLAMMATION IN WOMEN.

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CHANGES in the kidneys produced in the male by urethral stricture are so familiar as to be quite commonplace. In these cases the kidneys are slowly destroyed in virtue of the intermittent nature of the compression and retention, the bladder so loudly calling for relief that the patient is compelled to seek it before the kidneys are affected by direct pressure. Dilated calyces, decomposing urine, cystitis, and health-failure, with the formation of renal or vesical calculi, include the prominent symptoms; and while suppuration takes place to a limited extent in interstices of the kidneys and in saccules of the bladder, it is never a distinctive feature of the disease. Both kidneys are generally, though usually unequally, affected, and the system is so deteriorated by the renal inadequacy that any operation, either on the kidneys or on the patients affected with this disease, is attended with increased risk.

Probably a less common disease than this so-called surgical kidney, but a more common disease, perhaps, than we have hitherto suspected, is nephritis or pyonephritis in females, dependent on obstruction of one ureter through intra-pelvic inflammation.

A case that, unfortunately, ended fatally enables us to give a complete

history of the disease. A fatal issue is not uncommon, because the disease is not fully appreciated in the most remediable stages, nor is the course of treatment always clear.

For the following notes we are indebted to Mr. Burton, house surgeon, and my research scholar, Mr. Crook.

The patient was a general servant, aged twenty-three years, single, of good character and family history. She was accustomed to "do washing" in the yard, where she often got her feet wet, and as often felt very chilly in consequence. She particularly remembered having had a shivering fit about the beginning of December last, from which time she dated the onset of her illness. The rooms she then inhabited were very cold and her food insufficient.

About a week after this—that is, the middle of December—her water began to trouble her. She passed it every half hour, felt a good deal of smarting during and after micturition, had to rise frequently at night, and she believed the urine was then much increased in quantity. It was milky in color, but had no foul smell. About the beginning of the year she first noticed a little pus in the urine, or a "pellet of white material" sometimes streaked with blood, which continued to appear pretty regularly up to her entering the hospital. She mentioned a dull pain over the bladder as being in existence about that time, but it was never very distinct or severe.

Up to the 9th of March she improved somewhat and went to service again, having been idle from before Christmas—*i. e.*, a fortnight after her illness began. For a month she felt much better, but after that gradually became worse. At the end of April she had, for the first time, aching burning pains across the loins, lasting all the month of May. Her face at this time felt hot and flushed. She could not sleep for the pain, and her urine became worse in color, smarted more, and had to be passed more frequently.

Then suddenly she passed about half a pint of pus and blood, and since that time the urine has often contained pus streaked with blood, but never in so great quantity. She went to bed and remained there until a fortnight ago. While in bed the symptoms of pain in the back, frequent micturition, and smarting continued, but there was no pain over the bladder. The quantity of urine passed was, she thought; too small. In the middle of July she for the first time felt sharp pains in the right side. This pain would shoot up toward the kidney, and a swelling was soon apparent at the seat of pain. The pain passed off altogether for a week, then returned, and has remained ever since. There was always pain at that time on drawing a deep breath, coughing, etc.

On July 12th she passed at intervals of a few minutes about a quart of clear urine, but did not notice that the swelling in the side varied.

She was very positive that she had never been irregular in menstruation. The quantity was always normal; never any pus or discharge *per vaginam*, and she never had any extraordinary pain at the menstrual periods. Bowels always regular and appetite good before her illness commenced.

On admission, the right kidney was felt to be about twice the usual size and very tender to pressure. It was lower in position, and owing to the somewhat emaciated condition and collapsed abdomen could not

only be felt, but seen. The case was sent into hospital by Dr. William Williams with a diagnosis of renal calculus. On deep palpation in the right pelvic area, a fulness could be detected, but no pain was elicited, and the patient rather resented the idea of anything being wrong there. Vaginal examination revealed a distinct semi-fluctuating swelling in the right broad ligament. There was no special pain or tenderness on examination in this region. Rest and warm glycono-iodine douches were prescribed, and during the subsequent week the following points were noted: The temperature fluctuated between 97° and 98° in the morning and 101° , 102° , and 103° in the evening; the amount of urine passed was from twenty-eight to thirty-five ounces per diem; specific gravity, 1015 to 1016; it was slightly alkaline in reaction for the first four days, and then became acid, and always contained a considerable amount of pus. Appetite fair in spite of the temperature, bowels regular, and temperament equable and sanguine.

A consultation was held at the end of the week (21st), but the temperature had fallen, and until the 31st its range was from 97° to 99° . The renal swelling had diminished in size, and was much less tender, and the patient felt so much better that any active interference was postponed. The average quantity of urine passed daily during this period was forty-two ounces; specific gravity, 1018. On the 31st the temperature rose to 102.4° , and for the next few days it resumed its hectic condition, ranging from 97° to 101° or 102° . Traces of albumin appeared in the urine, its specific gravity was reduced to 1016 or 1017, and the average daily quantity, as well as the quantity of pus, remained about the same. The kidney was distinctly larger. As the patient was now losing ground it was decided to perform nephrotomy, which was done on August 8th. The lumbar incision was made and the kidney incised, when a considerable quantity of pus was evacuated, but no stone was felt or seen. A small abscess was found pointing in the vagina; it was opened on a grooved needle, when matter and some urine came away. A little urine dribbled through the opening for some time after. The average temperature from the time of operation until August 14th varied from 97° to 99.5° . The daily discharge of pus was free, the large dressings being wet through with urine and matter. The irritability of the bladder was much lessened and the patient felt much better. Milk diet.

On August 17th patient had a "bilious attack," characterized by sickness and vomiting, thought to be due to irritation of tube. This was shortened, and vomiting ceased. The temperature during this day and the next was very low, viz., 96° , 95.2° , 95° , 95.6° , rising to 97° on the evening of the 18th. On August 19th the temperature rose to 101° , and until the 26th assumed a higher range, from an average of 97° in the morning to 101° to 104° in the evening. On the 25th the tube opening was dilated with the finger and the kidney washed out with boric lotion every four hours without any effect in lowering the temperature.

On August 27th the kidney was removed by reopening the lumbar incision and tying the vessels and ureter in the usual way. No blood was lost. The kidney was much enlarged, the ureter dilated, and the renal substance was the seat of several large abscesses and several small ones filled with caseating material. There was no calculus.

The patient apparently bore the operation well, and passed two or three ounces of urine about four hours after operation. Toward midnight vomiting and collapse set in, and the pulse became very small and

weak. From the smell there seemed to be urine in the vomit, but it was thrown away before it could be examined. Next morning at 7.30 no urine was found in the bladder, and she had passed none since the early part of the night. She said she felt better, but her hands and feet were very cold, skin perspiring freely, and mind quite clear. She had a frightened look, and her pulse was quite imperceptible. She continued collapsed during the day, and died at 3 o'clock—*i. e.*, twenty-eight hours after operation—apparently from shock and suppression of urine.

A post-mortem examination was made eighteen hours after death. Body much emaciated. Wound in the right loin, four inches long, parallel to last rib, and clean. On opening the abdomen the omentum was found to be fixed in the pelvis, adherent to the uterus and bladder. Its fixed part was infiltrated with pus and nodules that seemed of a tubercular character. There was double pyosalpinx, and pus of a cheesy character was exuding from both Fallopian tubes. The right broad ligament was a thick, solid membrane. Adhesive, old-standing peritonitis was present over nearly all the abdomen, fixing the liver to diaphragm and the coils of intestine to each other at various parts. Some more recent lymph in pelvis, and pockets of pus here and there were found among the intestines, with tubercular nodules; some pus in Douglas's pouch. The right ureter ran through a mass of inflammatory tissue about an inch thick just before entering the bladder; its lumen was pervious, but much contracted. Above the broad ligament the ureter was dilated.

The substance of the left kidney was apparently healthy, but some pus was found in the pelvis and along the left ureter, which was somewhat dilated. The uterus, ovaries, tubes, and bladder were all firmly fixed to the sides and floor of the pelvis, and so matted together that it was most difficult to separate one from the other. No tubercles on lungs, spleen, left kidney, or liver. Other organs healthy. No tubercular ulceration of bowels.

REMARKS.—The first thought that strikes one on reading this case is the slow, insidious nature of the disease. Beginning with a chill early in December, the patient seemed to be simply out of health for several months, and the only symptoms pointing to the actual disease were the frequency of micturition with an accompanying pain and smarting. These symptoms she, a young girl, probably said nothing about to her friends or to her doctor, if she had one. The question of an infective blennorrhœa here asserts itself. We can only reply that there was nothing to lead us to suspect it except the above-mentioned symptoms and the theory that pyosalpinx is mostly gonorrhœal, and we did not feel justified in seeking information upon this subject from the patient. The next remarkable feature of the case was the absence of symptoms pointing to pelvic disease. Pelvic disease was never suspected until the patient came into hospital, and was only discovered by the examination conducted there. The renal swelling absorbed the patient's whole attention at this time.

The cause of the disease was probably a chill at the menstrual period, producing a check to that secretion and consequent congestion of the

generative organs, decomposition of the sanguineous discharge covering the walls of the vagina and uterus and external genitals, and infection by the ordinary abscess-germs of the tubes, broad ligaments, etc. If any specific germs were present in the tissues the explanation would hold good, except that the symptoms would be more likely to follow such specific infection.

This intra-pelvic inflammation is a very common complaint, well recognized by gynecologists, and is undoubtedly produced in pure virgins by colds, menstrual derangements, and other simple causes, although irregular living, specific infection, miscarriages, and parturition are the most common causes. In the great majority of cases the disease, as far as we know, begins and ends with the pelvic organs, but it would be a matter for careful observation whether the kidneys always escape being interfered with as perfectly as they seem to do.

When the kidneys are interfered with, the interference may arise in several possible ways:

1. The surrounding inflammation may produce an irritable, contracted bladder that prevents a free flow of renal secretion and a waterlogged state of the kidneys that may end in dilatation, degeneration, and supuration, as the case may be. This method of interference would result in symmetrical disease; is hardly, if ever, productive of any rapidly developing gross lesion, and I do not think would apply as an explanation to the class of cases under discussion.

2. The surrounding inflammation may produce a cystitis or ureteritis that, creeping upward along the mucous membranes of the bladder and ureter, may by continuity terminate in a pyelitis or nephritis. No symptoms of such a course appeared in the case we have described, and the bladder and ureter on post-mortem examination did not present any signs that gave grounds for such an explanation. The lining membrane of the ureter was healthy.

3. The pelvic inflammation may spread by continuity along the tissues outside of the ureters and produce perinephritic inflammation, but the appearances presented at the operation and at the post-mortem negatived the supposition of its production in this way. There were no signs of perinephritis or peri-ureteritis visible on any of these occasions; the kidney and ureter were enlarged, but both enlargements were produced by dilatation, and took place from within and not from without.

4. The renal disease was produced by intra-pelvic inflammatory effusion into the broad ligament pressing upon the ureter close to the bladder in such a way as to produce obstruction to the passage of urine, partial or complete.

This is in all probability the true explanation. The post-mortem showed the ureter on the affected side constricted by a mass of inflammatory effusion an inch thick. At the post-mortem, and long before,

the tension of this inflammatory effusion was small compared with what it had been in the early stages of the pelvic disease; but the dilated ureter above the effusion, and its narrowed portion below, showed what had once occurred.

Assuming that the compression of the ureter by inflammatory intrapelvic material was a necessary step in the production of the nephritis, the succeeding phenomena would be: stasis of the renal secretion more or less complete in the ureter and pelvic calyces, distention of these regions, and a condition of hydronephrosis. The patient described an occasional excessive flow of urine that may point to this condition, but the terms of the description were too indefinite to be relied upon to perhaps indicate anything more than the usual fluctuations of the secretion that often occur, especially in a nervous young woman.

The stoppage of the flow of the secretion tended to cause decomposition of the urine confined in the ureter and renal pelvis. This decomposition alone would tend to set up inflammation, especially when formed by the irritation of increasing tension and by the febrile state of the blood and tissues accompanying the pyosalpingitis. Suppuration evidently took place in the secreting substance of the kidney, and was a nephritis, not a pyelitis. The tension and irritation of the retained urine supplied the predisposing cause and the febrile state of the system the infecting or exciting cause. The former represented the tinder and the latter the match, and the two combined lighted up the disease. Mention is made of tubercles on the peritoneum, and the smaller renal foci of suppuration seemed tubercular, and probably in these places the tissues contained the tubercular microbe. We are, however, inclined to consider the tubercular disease a secondary infection limited in extent as yet, but spreading in the tissues already devitalized by the simple inflammation. Tubercular kidneys have, I think, often the same origin, and I can recall some striking instances where their removal has completely cured the patients, although at the time of operation the outlook was supposed to be most gloomy. The obstruction to the flow of urine or pus was probably never complete. Pus was noticed in the urine very early in the disease, and once a very large quantity, noticed distinctly by the patient, came away at one time. This arose rather from the rupture into the ureter of a renal abscess or perhaps from an increased patency of the lower end of the ureter and a consequent flow from the engorged pelvis of the kidney and upper part of the ureter. A slight pyelitis was present, on post-mortem, in the pelvis of the opposite kidney, probably due to the irritable bladder, but the renal substance on this side was sound.

The frequency of the disease has of late seemed to me to be greater than I had previously thought it to be. When I look back on my practice for some years, I can recall many instances of it.

An old nurse, who had been married and afterward suffered from pelvic cellulitis, consulted me many years ago with the identical lesions present in this case. By rest and care the symptoms abated, and she left for her home in the sister isle, to die next year from, as far as I could learn, an enormous pyonephritis that so perplexed the different medical men who saw it that nothing was done until she was moribund. I believe an opening was made in the kidney too late to influence the result and only sufficient to establish the diagnosis.

On February 28, 1888, a woman, aged twenty-eight years, single, a warehouse hand, was admitted into hospital moribund, and died before I had an opportunity of making a diagnosis. She was bloated and her legs pitted from anasarca. The renal calyces and pelves were dilated, and the secreting substance of both kidneys reduced to a thin peripheral layer. The upper parts of both ureters were dilated, and two sacs of pus—a double pyosalpinx—were found in the pelvis. The tissues in the pelvis were very much adherent to each other.

In 1884 a woman, aged thirty-two years, came under my care suffering from right salpingitis and pelvic cellulitis, ascribed to a confinement seven years before. By rest, etc., she was relieved, but came back again next year and had the right appendages removed, recovering completely, as we thought. In 1886 she again returned, with a right pyonephrosis that had burst and formed sinuses all around that side of the abdomen, rendering her condition hopeless.

In March, 1885, a woman, aged twenty-four years, came under my care suffering from an enlargement at the left side of the uterus, the result of a fall. After five months' rest the inflamed hæmatocele (as it was diagnosticated) subsided, and the patient resumed her work. She was readmitted on January 14, 1887, when we found the left Fallopian tube much thickened; menses scanty and irregular, and of a light color; great dysuria and anorexia. Expectant treatment was tried up to June 16th, when, no distinct improvement being secured, the left tube and ovary were removed. The left kidney was then enlarged and the urine contained pus, but it was hoped that with removal of the irritating pelvic trouble recovery of the kidney might ensue. The kidney, however, became rapidly worse, and, on exploration, it was found so much disorganized that it was removed on July 27th, and the woman recovered completely.

A woman, aged fifty-one years, was admitted into the Royal Southern Hospital on September 23, 1890, suffering from frequency of micturition, occasional incontinence of urine, and pelvic pain. A swelling was found to the left of the uterus, fixing that organ in the pelvis. The bladder was dilated, its walls velvety, and the urine, of specific gravity 1010, acid, contained albumin, gravel, and pus. Cancer of ovary, broad ligament, or bladder was suspected, but with rest and care all the symptoms and signs disappeared in four months, and the patient was discharged well.

In the following case a different cause produced the kidney trouble, but in much the same way:

Mrs. W., aged thirty-six years, was admitted to the Royal Southern Hospital, on May 8th, complaining of pain in the urethra and irritable

bladder, symptoms that had lasted more or less for eight or nine years, and had now produced much debility and mental depression, with sickness, diarrhœa, etc. In 1881 she had what her medical attendant called "swollen ovaries" and a "lump on the bladder." The urine was 1012 specific gravity, contained one-third albumin and a considerable amount of pus. Examination under chloroform showed that the bladder was distended, but normal in every other respect. All the other pelvic and abdominal organs were apparently normal, except that between the os uteri and the urethra, situated beneath the anterior vaginal wall, was a small nodule about the size of a walnut. On the urethra being dilated the nodule was felt to press upon the vesical trigone from below and in such a position as to obstruct the urethral orifice. On May 15th this tumor was shelled out after an incision had been made over it through the vaginal mucous membrane. The bladder was not opened, and the small fibroid tumor—for such it was—lay quite free between the vaginal and vesical mucous membranes. Very slight relief followed. She was discharged June 5th, weaker than on admission, and died soon after from the renal disorganization.

These are only a few representative cases culled at random from my notes. I intended here to try to tabulate the comparative frequency of renal disturbance in pelvic inflammation, but I find that my cases, not being prepared for this purpose, are sometimes deficient in information about the state of the urine. This is a subject for future study. I have said enough to show that the disease is sufficiently common and important to have attention directed to it, especially as most of the text-books are either silent on the subject or pass it over with a few remarks that only indirectly refer to the matter.

TREATMENT.—When diagnosticated early the treatment is absolute rest in bed, careful diet, hot vaginal douches, aperients and febrifuges as required, and tonics, of which quinine is the chief. Early and strict adoption of the treatment will rarely fail to cure. When the disease keeps advancing in spite of this treatment, or when the disease has so far advanced as to render these measures hopeless, then abdominal section and exploration of the pelvis, with drainage or removal of the inflamed appendages, may suffice. In other cases the affected kidney will also require drainage or removal. The advanced cases are very unsatisfactory, the early cases very tractable. Let us endeavor to diagnose these cases in the early stage and to prevent their passing beyond that stage.

A CONTRIBUTION TO SPINAL-CORD SURGERY.

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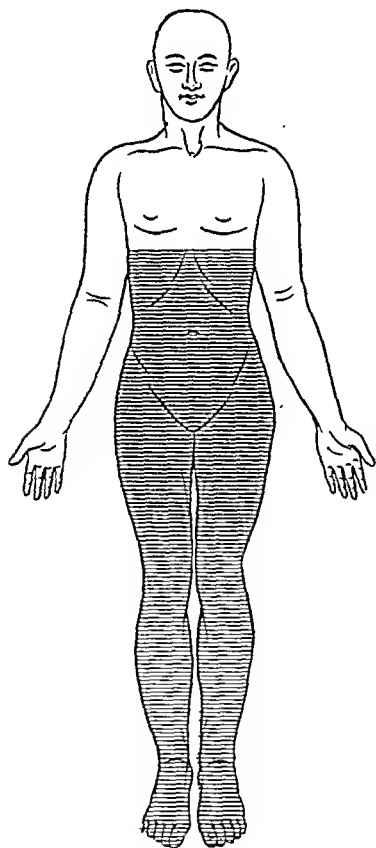
THE subject of surgery of the spinal cord has recently received so much attention and discussion, finding urgent advocates in some and opponents in other directions, that every case bearing on the question is of value, particularly as much of the argument, until very recently, has been based mainly on theoretical grounds and misconceptions. The number of thoroughly reported cases is yet small, and ultimate results often unknown, making deductions difficult and uncertain. The mortality rate is, of necessity, very high with operation, and without it a fatal termination, in any considerable injury to this important structure, is the almost invariable rule. Occasionally, however, surgical interference has saved a life that would otherwise have undoubtedly been lost, and post-mortem findings not rarely lead to the conclusion that properly directed operation might have gained further victories.

Regarding the history, technique, and bibliography of the subject, it is not our purpose to speak, except as variations or peculiarities in our cases call for comment. The whole matter has been recently so well set forth by Prof. J. William White, of Philadelphia; and by Thorburn, Horsley, Abbe, Lloyd, and others, to whose works we gladly refer for these details, and to whom we have personal acknowledgments to make, that a repetition would be superfluous. These cases are of value from the physiological standpoint also, for in some instances they correspond by the exactness of conditions to experimental investigations upon lower animals, with the added advantage of being free from the obvious drawbacks of such experiments and their probable lack of parallelism with what occurs in man.

Investigations as to motion, sensation, reflexes, and other similar points were carried out as fully as the condition of the patients would warrant, and were in every instance frequently repeated and verified by a number of observers. In order to be as brief as is consistent with clearness, negative conditions are omitted, as a rule, from our reports, each of which, it is hoped, may convey its own lesson. We desire to express our obligation to the various surgeons in immediate control of the patients, for their courtesy and the privilege of publishing their operations.

CASE I. *Gunshot injury to the spinal cord at level of third dorsal segment; paralysis of limbs and trunk; laminectomy; death twenty-one days after operation.*—I. K., aged twenty-eight years, received one bullet-wound from a revolver of large calibre, fired at a distance of five feet to the left and somewhat in front of the patient. He remembered falling to the ground, but nothing further until brought to the hospital, where examination showed a wound in the fourth left intercostal space in the mid-axillary line. There was pneumothorax, but no evidence of hemorrhage into the pleural cavity. The case was treated as one of gunshot

FIG. 1.



Case I. Showing area of anæsthesia in lines.

wound of the chest until the patient was asked to turn upon his side, when it was found that both lower limbs and the muscles of the lower half of the trunk, with the exception of the abdominals, were completely paralyzed. Respiration was abdominal and not labored. There was no paralysis of any of the muscles of the upper extremities. As shown in the figure (Fig. 1), there was complete anæsthesia of the trunk and both lower extremities, the highest level of this area being at the lower border of the seventh rib. No hyperæsthesia above this level could ever be detected while in the hospital. Upon admission he had no subjective sensation except that of numbness in both arms. All the superficial and deep reflexes were lost below the level of the lesion. Marked priapism, but no seminal emissions. There was retention of both urine and feces for three days, and no sensation on passing the catheter. The pulse was 96; temperature normal. Sixteen hours after admission an exploratory laminectomy was performed by Dr. Weller Van Hook, in order to ascertain whether the pressure symptoms were due to hemorrhage or to a fracture. After the usual preparations and the use of chloroform as an anæsthetic, the patient was placed in a semi-prone position. An incision

was made five inches long, its centre opposite the third dorsal spine. The spinous process and laminae of this vertebra were removed and the cord and its membrane, apparently in a normal condition, exposed. The posterior arch of the second dorsal vertebra was then removed by means of a chisel and rongeur forceps. The spinal canal being thus opened, the cord was found reduced to an unrecognizable pulplified mass for a distance of one and a half inches. Suturing of the severed ends being impossible, the wound was irrigated with warm (110°) sterilized water, the dura sutured with fine catgut, deep muscular and superficial cuta-

neous sutures of silk being inserted, with the use of iodoform gauze at the upper and lower angles of the wound as a drain. The patient was in excellent condition after the operation, although respiration was suspended once. His symptoms changed but little during the remainder of his stay in the hospital. After the operation he was placed upon a water-bed. There was marked tympanites at intervals, and alternately retention and involuntary evacuation of both feces and urine. His temperature varied between 99° and 102° . Seventeen days after the operation the patient requested his discharge. He died at home four days after.

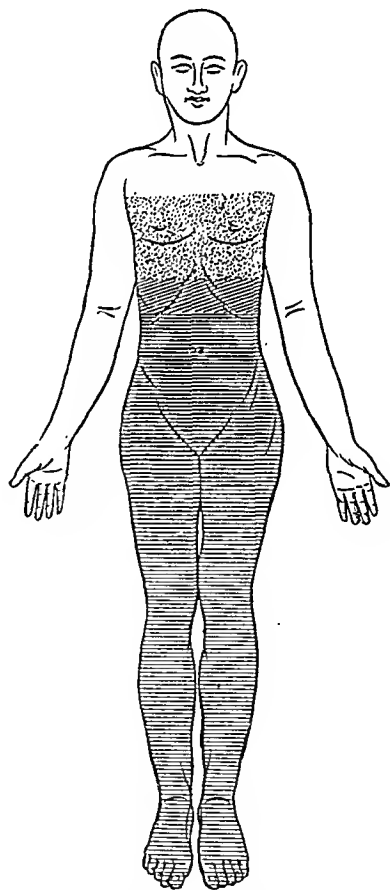
A post-mortem examination was held by the coroner's physician, Dr. Ludvig Hcktoen, who found the bullet imbedded in the substance of the cord opposite the second dorsal vertebra. There was much subdural hemorrhage at this point, and acute cystitis and pyelo-nephritis.

CASE II. *Gunshot injury to the spinal cord at level of fifth dorsal vertebra; paralysis of lower limbs and trunk; laminectomy; death thirty-one days after operation.*—W. D., aged nineteen years,

was admitted to the service of Dr. T. J. Conley on September 2, 1891. He had received, about one hour before, two bullet-wounds from a revolver, held about six feet behind and somewhat to the left. One bullet entered the outer aspect of the left arm and was found subcutaneously on the inner aspect. The other entered about one-half inch to the left of the spinous process of the fifth dorsal vertebra. He was "immediately" paralyzed in both lower limbs, according to his own statement, and upon being turned over the escape of a clear, watery cerebro-spinal fluid was noticed by a bystander. On admission he was found to be well nourished, rational, and complained of a "dead rumbling" in both legs. Respiration abdominal, with no evidence of dyspnoea. The above wounds and the escape of the fluid were noted. There was paralysis of both lower extremities and of the lower half of the trunk. Complete anæsthesia with its highest level extended transversely around the body about two inches above the umbilicus. Be-

tween this level and the ninth rib there was incomplete anæsthesia, and from the upper boundary of this area to the second rib a transverse zone of hyperæsthesia existed. This is most marked in the parasternal and mid-axillary lines (Fig. 2). There was complete retention of urine and

FIG. 2.



Case II. Showing area of anæsthesia by transverse lines, of incomplete anæsthesia by diagonal lines, and of hyperæsthesia by dots.

feces, accompanied by incomplete priapism, but no emissions. The deep reflexes were all absent. The cutaneous, viz., plantar, cremasteric, gluteal, and abdominal, were all faint on the left side, absent on the right. This is easily explained by the fact that, as was ascertained during the operation, the cord had not been completely destroyed on the left side. The pupils were dilated and mobile; the pulse was 90, full and soft; temperature normal; there was no evidence of shock or of hemorrhage.

In the hope of relieving any bony compression, and at his own request that some effort should be made, the patient was anaesthetized, chloroform being employed, and then placed in an almost full prone position, his thorax resting upon a pillow. An incision five inches long was made along the median line of the back with the bullet-wound as its centre, and carried down to the bones. The bullet was found to have passed beneath and splintered the left lamina of the fifth dorsal vertebra, penetrating the spinal canal at this point. The left lamina and spinous process were removed with a chisel and bone-forceps and the dura incised. There was no subdural hemorrhage, but fragments of bone and of clothing were removed. The spinal cord was found to be almost completely severed, a few fibres only of the left lateral columns remaining. Upon exploration of the wound the bullet (38-calibre) was found imbedded in the body of this vertebra a little to the right of the median line, and removed. The wound was irrigated with warm sterilized water, the dura sutured with fine catgut; deep muscular and superficial cutaneous silk sutures, with an iodoform gauze drain, were inserted. The patient left the table in excellent condition and was placed upon a water-bed.

There was but little change in his symptoms during the twenty-seven days in which he remained under observation. Considerable tympanites existed at intervals. Retention of urine, with the escape of a clear, glairy mucus from the meatus, and of feces, persisted throughout. The temperature ranged between 98° and 103°. There was no union of the wound, owing to the constant escape of cerebro-spinal fluid. No bed-sores developed during his stay in the hospital. Upon September 29th, twenty-seven days after the operation, he requested his discharge, and, as we learned subsequently, died at his home four days after leaving the hospital. He was perfectly rational up to the moment of death, and no change had occurred in his symptoms. A post-mortem examination made by Dr. Hektoen showed a fibrino-plastic meningitis above and below the seat of injury; a destruction of cord substance, with the exception of a few of the fibres of the left lateral columns for a distance of one and one-half inches at the fifth dorsal vertebra, acute cystitis and pyelo-nephritis.

The question may be asked why were either of these cases of gunshot wound operated upon when all symptoms indicated a complete destruction of the cord? In reply to this, as eminent an authority as Gowers may be quoted. He states that in such cases the cord suffers more often from displaced fragments of bone than from the ball itself. A bullet may strike the spinal column and cause immediate paraplegia as complete as if the cord had been divided, and yet it may be found that the cord itself is not at all injured; all this resulting from mere con-

cussion. Hence it seems perfectly justifiable to explore the wound thoroughly by means of an aseptic laminectomy, which, as is shown in both cases, did not shorten the duration of life, but probably by the relief of inflammatory or other pressure actually prolonged it. The second case is especially interesting,

1st. Because the escape of cerebro-spinal fluid afforded positive evidence of entrance into the spinal canal.

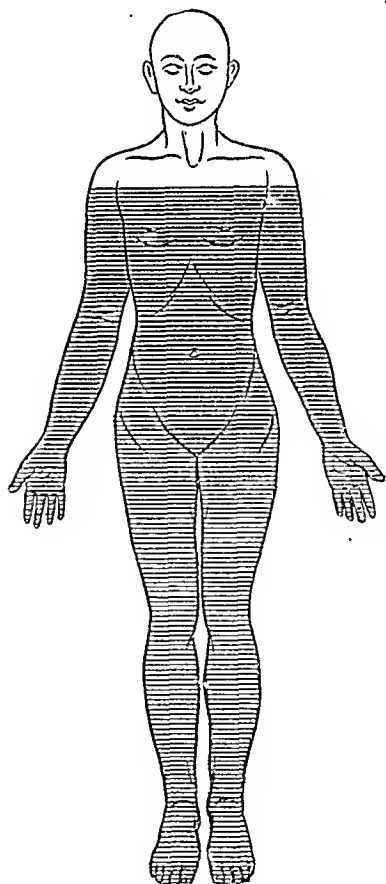
2d. Because of the only partial loss of reflexes upon the left side, the cord not having been severed completely on this side at the seat of injury.

3d. That operation under antiseptic precautions is perfectly justifiable as giving the surgeon the opportunity of excluding bony compression, and is not merely a meddlesome interference to remove a probably septic bullet.

4th. That suture of the spinal cord is still impossible.

CASE III. *Fracture of fifth and sixth cervical vertebrae; complete paralysis of limbs and trunk; laminectomy twenty hours after injury; death eight hours after operation.*—C. H., aged twenty-nine, was admitted June 25, 1891, deeply intoxicated, in a semi-comatose condition, pupils dilated, breath smelling strongly of alcohol. He was asked to sit up, but on account of the intoxicated condition his non-compliance was unobserved. He was sent to a ward to "sober up." He had been found by the police lying on the sidewalk, and was unable to answer any questions or to respond to any form of stimulation or even severe supraorbital pressure. A few hours after, when he became more rational, an examination revealed a complete paralysis of both upper and lower limbs and of thoracic and abdominal muscles. Respiration was jerky, diaphragmatic, anaesthesia extended as high as the upper border of the third rib in front, and the fifth dorsal spine behind. Its highest level on the arms was a projection of the line of the upper border of the third rib. (Fig. 3.) It was impossible to ascertain whether any hyperæsthetic area existed. Pupils were widely dilated. There was no evidence of the involvement of any of the cranial nerves. There was complete absence of both superficial and deep reflexes. There was turgidity of

FIG. 3.

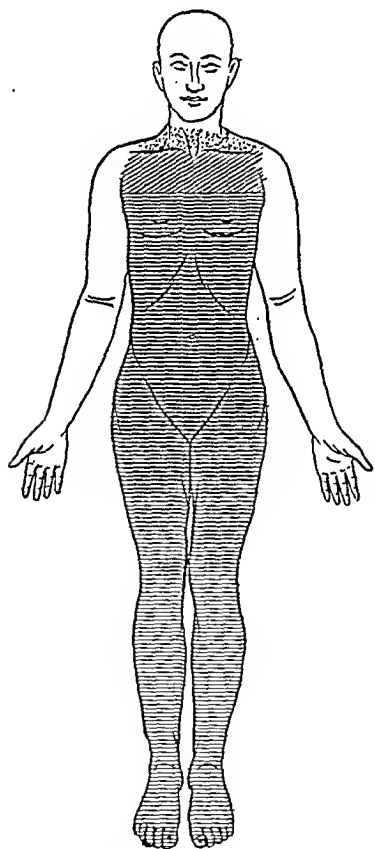


Case III. Anæsthesia shown in lines.

the penis, but no erection or emission; retention of urine, but involuntary defecation. He was now able to state that he had fallen a distance of eight feet, striking upon his head. There was tenderness on pressure over the cervical region, with a depression opposite the spines of the fifth and sixth vertebræ. The temperature rose from 97.8° on admission to 104° , axilla, seventeen hours after the injury. The patient's condition being clearly hopeless otherwise, an exploratory laminectomy was performed by Dr. Albert I. Bouffleur at 8 P. M., twenty hours after injury.

The head and back of the neck having been shaved and carefully prepared, an incision was made over the cervical spinous processes, hav-

FIG. 4.



Case IV. Showing complete anesthesia in transverse lines, of partial anesthesia in diagonal lines, and of hyperesthesia in dots.

ing its centre opposite the fifth. The muscles and ligaments having been cleared from the arch, the spinous processes of the fifth and sixth were found freely movable and crepitating, the right laminae of these vertebræ were removed with a chisel and rongeur forceps, thus exposing the spinal canal, from which considerable clotted and fluid extra-dural blood escaped. The dura presented a perfectly normal appearance. As nothing further could be done, the muscles were brought together by deep coarse silk sutures, and a large drainage-tube and superficial fine silk sutures inserted, and the patient placed upon a posterior splint padded in the cervical region. The pulse upon leaving the table was 120, small and soft; respiration very shallow and labored. The temperature rose to 106° axilla. He gradually became more cyanotic, and eight hours after the operation died apparently of respiratory failure. No post-mortem examination could be obtained.

Whether in this case there was a fracture of the bodies of the fifth and sixth cervical vertebræ, or a dislocation existed which had been reduced by manipulation resulting in a temporary crush of the cord, it is impossible to state.

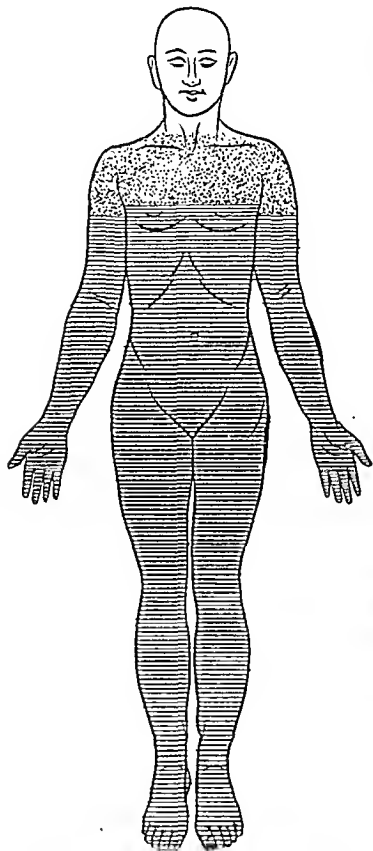
CASE IV. *Dislocation of second dorsal and first lumbar vertebræ; fracture of the twelfth dorsal vertebra; paralysis of lower limbs and trunk; laminectomy sixty-two hours after injury; death fifteen hours after operation.*—G. T. was struck in the breast by a cable grip-car, and fell backward, being found in an unconscious condition. He was admitted to the ser-

vice of Dr. Jacob Frank about one hour after injury, and, in addition to the simple fracture of the sternum, there was a soft, fluctuating swelling corresponding to the normal position of the spine of the first lumbar vertebra, into which the finger could be pressed very deeply, indicating an absence of the spinous process. A deformity existed in the upper dorsal region caused by the projection backward of the spine of the second dorsal vertebra; crepitus and a false point of motion upon manipulation of the arch of the twelfth dorsal vertebra. Pulse was 90, full and soft, but soon became rapid and almost imperceptible. Respiration 24, diaphragmatic and shallow. The lower limb, abdominal and intercostal muscles were completely paralyzed, and anæsthesia extended as high as the upper border of the third rib. (Fig. 4.) From this highest level of anæsthesia to the clavicle there was incomplete anæsthesia, and extending an indefinite distance above this an area of hyperæsthesia. Reflexes, both superficial and deep, absent except the left cremasteric, which could easily be elicited upon stroking the left thigh. There was complete priapism and retention of the urine and feces. Sixty-two hours after injury an exploratory laminectomy, with the hope of reducing the dislocations, was performed by Dr. A. E. Halstead. An incision was made over the first lumbar vertebra, and the swelling noted upon admission was found to be due to a large hæmatoma dissecting up all the muscles. The left lamina and spinous process of the twelfth dorsal vertebra were found fractured, and were removed. After the hæmatoma had been washed out with warm sterilized water a dislocation directly forward of the first lumbar vertebra, with a flexion of the cord, was noted. Extension was made on the lower limbs, followed by flexion of thighs on pelvis, and pelvis on trunk, and thus luxation fully reduced, and an attempt made to maintain it by fixation in this position with pillows and bandages. While this wound was being sutured an incision was made over the prominence in the upper dorsal region, and by fixation of thorax and extension of neck on trunk this dislocation was also reduced, but relapsed easily into the former position. Owing to the very low condition of the patient, it was deemed inadvisable to attempt to maintain permanent reduction by means of silver wires. The patient's condition became worse, respiration became more labored and rapid, temperature rose to 106° axilla, and death occurred fifteen hours after operation, the patient never having rallied from the shock. No post-mortem examination was held.

CASE V. *Fracture of body and laminae of fifth cervical vertebra; complete paralysis of limbs and trunk; death eight days after injury.*—J. A., aged thirty-five, was admitted to the service of Dr. Sanger Brown, November 8th. Brought by police ambulance, with a history of having been arrested on the previous evening while intoxicated and placed in a cell. Upon the morning of admission he was found lying upon the floor of the cell, and when asked to get up stated that he was unable to do so on account of the paralysis of both legs. The manner in which the accident occurred was not to be ascertained either from the patient or the police. Examination revealed severe pain referred to back of neck when the head was moved, and he said he felt better when the head was extended. A marked depression existed opposite the spine of the fourth cervical vertebra, and upon manipulation crepitus could be obtained. No irregularities could be felt on the pharyngeal side through the mouth. There was considerable tenderness when pressure was made

over the cervical region. Respiration was shallow and diaphragmatic; pulse 64, small and soft; temperature subnormal; pupils contracted and feebly mobile. There was complete paralysis of the lower limbs and of the abdominal and thoracic muscles. The position of the upper limbs was not noted at this time, but all the muscles, with the exception of the biceps, supinator longus, and deltoid, were paralyzed, so that when he was asked to move his arms he would flex the elbows, abduct

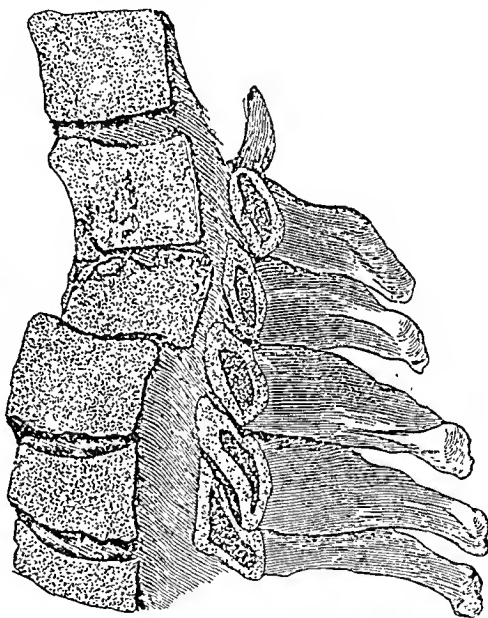
FIG. 5.



Case V. Anæsthesia shown in lines, hyperæsthesia in dots.

the humerus, and supinate the hand in the order named. There was incomplete anæsthesia at the time of admission, the patient being able to localize tactile sensation on his lower limbs and abdomen fairly well. Only the patellar reflex was

FIG. 6.



Drawing made from post-mortem specimen (Case V.), showing fracture of body of fifth cervical vertebra, and its projection into the spinal canal.

observed, and this was found absent. Marked priapism without seminal emissions; retention of urine, and later involuntary evacuation of feces. Examination a few hours later showed complete anæsthesia of lower limbs and trunk up to fourth rib anteriorly, and to level of second dorsal spine behind, and on arms to conjunction of upper and middle thirds of arm in front, and to a little above elbow on the outer and posterior aspects. Above the upper level of the area of anæsthesia on both arm and trunk there was hyperæsthesia extending about two inches above the clavicle. (Fig. 5.) All the deep and superficial reflexes were absent, with the exception of the plantar, which was faint, and the cremasteric, almost imperceptible. There was complete paral-

ysis of both upper and lower extremities, the patient being able to use the posterior scapular muscles only. His arms were semiflexed, adducted, and pronated. Priapism had disappeared. Temperature had risen to 106.2° F., axilla.

November 11th, three days after the injury, the condition remained unchanged. There was complete retention of the urine and involuntary defecation. His temperature had fallen to 99°, axilla. He was placed upon a water-bed, the head of which was raised at an angle of 45°, and the portion used to support the head in the Sayre's suspension apparatus applied so that there would be a tension upon the fractured vertebra. During the manipulation in applying the extension the patient suddenly became cyanotic, and respiration ceased, but was restored upon extension of the head on the neck. No improvement followed the use of the extension. The patient gradually sank, and died November 16th, eight days after the injury. A post-mortem examination made by Dr. Ludvig Hektoen showed a fracture almost symmetrical of the laminae, near the body of the fourth cervical vertebra. No subdural hemorrhage. As shown in the drawing (Fig. 6), there is a comminuted fracture of the upper half of the body of the fourth vertebra, causing a marked projection into and narrowing the lumen of the spinal canal, and producing an area of softening in the cord itself directly opposite the point of fracture. Sections showed the cord to be red, markings obliterated and very soft.

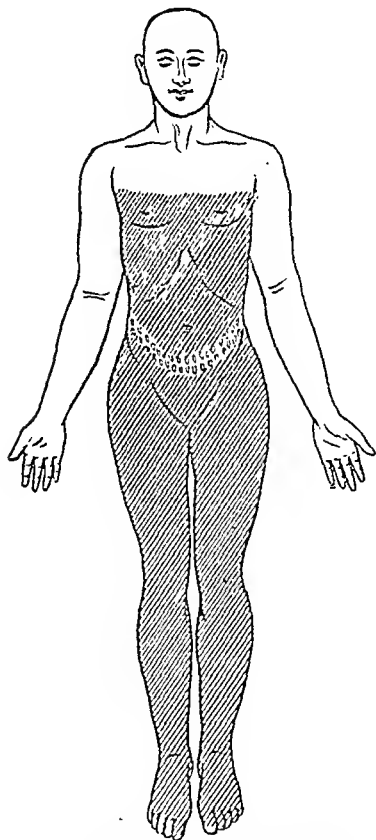
The post-mortem findings in this case lead to the conclusion that an early operation would have given the patient the best opportunity for recovery. The injury to the cord was at the level of the sixth cervical segment, and verifies, by the paralysis at first of all the muscles of the upper extremities excepting the biceps, supinator longus, and deltoid, the localization of the spinal centres for this segment, as laid down by Thorburn and others.

CASE VI. *Sarcoma in substance of cord at level of fourth and fifth dorsal vertebrae; operation, enucleation; death on fifth day.*—The following absolutely unique case we are permitted to report by the kindness of Dr. Christian Fenger, of this city. The notes are mainly by Dr. Frank Billings, who saw the case in consultation and at the time of operation.

The history of the patient in brief is this: He was a native of Ireland, thirty-eight years of age, and lived in this State (Illinois). He had been treated at Freeport. His personal history was clouded by ignorance; he knew very little about his people and gave a remarkably obtuse history concerning himself. He seemed, however, to be free from hereditary taint of any kind. He was unable to give any exact dates concerning his present sickness; he stated that about one year ago he was seized one night with a severe pain in the lumbar region of the spine, so severe that a physician was called. This pain repeated itself for three nights; it disappeared, or at least diminished, during the day, so that he attended to his business, that of a saloon keeper. He said the pain did not disappear after that, but continued, although not so severe as during the first three days, until he came to Chicago. He described the pain as of a dull aching character, and situated directly in the spinal column about the lumbar vertebrae. No other symptoms

developed for three months; then he began to feel weak in his right lower extremity, and simultaneously with the development of that weakness he felt a constricting band about his abdomen midway between the umbilicus and pubes. About three months after the development of weakness in the right lower extremity the left lower extremity became affected and he became unable to walk. That was some time in January 1890. His bowels were not affected, although he suffered from constipation after taking to his bed; he was always able to void his urine voluntarily. He was brought to Chicago and placed in the Emergency Hospital in Dr. Fenger's care.

FIG. 7.



Case VI. Partial anæsthesia shown in diagonal lines, and girdle sensation in dots.

He was robust in appearance and well nourished; complained of the constricting band about the abdomen between the umbilicus and the pubes, and occasional lancinating pains extending down the lower extremities along the nerves in front and behind. He complained of the constipation that I have mentioned, and said he had been always able to void his water, but on examination I found the bladder distended to the umbilicus and drew off a full complement of urine. Examination of the man showed nothing abnormal above the diaphragm as far as the internal organs were concerned. His lungs and heart seemed to be in normal condition, and he had good strength in his arms and the muscles of his head and neck. Below the fourth rib (Fig. 7) there was almost entire absence of temperature sense, and greatly diminished tactile sensation; he could tell when anyone touched his skin, but that was all. There was paresis of the lower extremities, more of the left than of the right limb, but with marked increase of all the reflexes of the lower extremities; all superficial and deep reflexes were present everywhere.

These were all the symptoms the man presented in addition to the band of constriction about his body midway between the umbilicus and pubes.

We arrived at a diagnosis of pressure myelitis from the fact of its developing so slowly, and from the fact that there were present an increase of all the reflexes in the body. Horsley and Gowers have laid down the rule that the tumor that presses on the cord is two inches above the pain, which, as you remember, in this case was on a level with the constricting band, midway between the umbilicus and the pubes, but, as there was anæsthesia as high as the fourth dorsal vertebra, which was hard to explain, it was decided that if an operation was performed

it should be at that point. The man consented to the operation, and on the 5th of June Dr. Fenger cut down upon the fourth dorsal spine, making an incision which laid bare the spinous processes of the third, fourth, and fifth dorsal vertebræ, and after cutting away the spines of those three and the laminae of the fourth and fifth, no tumor could be found pressing upon the cord. Externally the membranes of the cord and the fat surrounding it looked normal—looked as if we had missed the diagnosis.

Having made an incision through the dura mater, the cord upon inspection looked normal, but upon passing the fingers over it there was a distinct enlargement of its posterior half, and a longitudinal incision along its posterior median line revealed a tumor nearly two inches long, conical at both extremities, largest in the middle. It was incised in the centre to remove it, and one-half used for microscopic examination by Dr. George S. Isham. It has been found to be a large spindle-celled sarcoma. The tumor was easily enucleated and seemingly without hemorrhage, and then the dura mater was almost closed, leaving slight capillary drainage, and the wound closed in an antiseptic manner. The man had complete paraplegia after the operation. For two days his temperature did not exceed 101° , ran from 99° to 101° , then rapidly developed to $103\frac{1}{2}^{\circ}$, and he died of septicæmia on the fifth day after the operation.

That portion of the cord involved in the operation was removed post-mortem, and was placed in Müller's fluid. The anterior two-thirds of the cord was intact, the gray matter seemingly was not compressed, the tumor lay in the posterior third of the cord and was covered with a thin layer of the white columns. The cause of the paraplegia that followed the operation was a hemorrhage in the cord just below the tumor, that was probably a post-operative hemorrhage, extending almost transversely through the cord. Before the cord was incised longitudinally to get at the tumor a softened spot could be felt just below the latter, and at that spot the hemorrhage occurred.

But for the septicæmia that developed it is possible that this man would have recovered, at least to a great extent, his power of motion; perhaps he would have had some anæsthesia from the laceration of the posterior part of the cord, but it seems possible that this operation might have relieved him. There was a purulent infiltration of the soft tissues all about the wound, and localized suppurative spinal meningitis. Why this occurred no one can say, as every care as to cleanliness was taken during the operation.

The girdle pain at the level of the last dorsal segment is not readily understood by the findings in this case, and as this portion of the cord was not investigated post-mortem, it must remain unexplained.

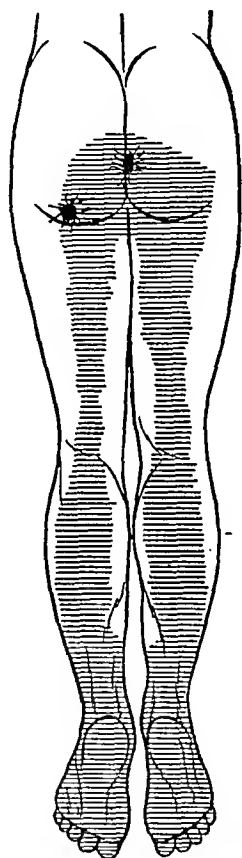
CASE VII. *Crushing injury of the cauda; operation after two years; some relief.*—We are under obligation to Dr. J. Frank, surgeon to the St. Elizabeth Hospital of this city, for the privilege of reporting this case, which has been carefully watched for two years by one of us.

J. M., a Polish boy aged nineteen years, of good habits, presenting a personal and family history free from notable peculiarities, a carpenter by trade; on the 18th of July, 1888, fell from a roof upon which he was working, to the ground, a distance of thirty-six feet. Ten feet from the ground he came in contact with another building, striking his back, finally alighting upon his feet and then falling unconscious, and so remained until carried a short distance into the street. From the very first there was complete loss of power in the lower extremities and much pain throughout the entire length of the back. The feet were numb and without sensation, but a darting pain in the legs persisted for weeks, gradually passing away. There was also more or less anæsthesia as high as the groins. Over the sacrum was an extensive ecchymosis which rapidly went on to the formation of a large slough within the first three days. The extremities rapidly swelled greatly, and this lasted for a week. After three days, no water having been passed, he was catheterized by the physician in charge of the case, and it was noted that the penis and scrotum were absolutely anæsthetic. When the bowels moved upon the exhibition of a cathartic the patient could not feel anything passing from the anus. Catheterization was required for a fortnight, when incontinence followed, the urine constantly dribbling away in both the recumbent and erect positions, and it is only during the past year that he has been able to retain his water for about three hours at a time. The bowels moved often without his knowledge, so that he unconsciously soiled his bed or trousers. Afterward by going to stool at regular intervals he managed to keep himself clean, but never experienced any sensation from the passing feces. The paralysis in the limbs, which seems never to have been complete, gradually improved. He sat up after the first month, but was confined to a chair when not lying down, for six months. Then he commenced to get about by pushing a chair before him. During the past four or five months he has been able to walk about his room and for short distances in a feeble and uncertain manner. Since the accident there has never been an erection of the penis or a seminal emission. Other organic functions have been properly performed, and his physical health has never been seriously undermined or even temporarily notably affected. Previous to his admission to the St. Elizabeth Hospital, under the care of Dr. Frank, he has been in the hands of numerous physicians, and spent some months in the Alexian Brothers' Hospital in this city. The slough over the sacrum never properly healed, and a fistulous tract formed leading to the sacro-coccygeal joint, with a dense cicatricial and extensive opening in the middle line. About five months ago a second similar opening formed in the lower and inner aspect of the left gluteal region. These have been painless, and the patient has also noticed that he could not feel the floor with his feet or the chair upon which he was sitting, and that the back of his thighs and legs were insensible to wind blowing upon them, or to pinching, or any form of sensory impression.

March 20, 1890, he presents the following condition: His attitude is uncertain, and he can only stand with his feet well separated. When he walks the pelvis oscillates, and the femora wobble around in their sockets as the weight of the body falls upon them. There is weakness in all the movements of the lower extremities, but particularly in the rotation of the thighs. Over an area embracing exactly and only the cutaneous distribution of the four lower sacral nerves, in

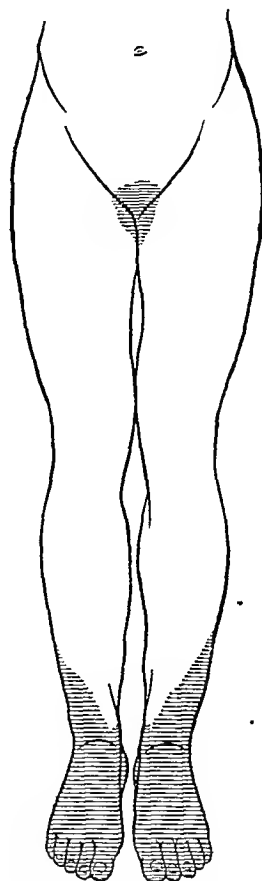
the territory supplied by the pudic, small sciatic, external saphenous, musculo-cutaneous, anterior tibial, and posterior tibial nerves, there is complete anæsthesia for tactile, pressure, thermic, electric, and painful impressions, all of which are, as nearly as can be determined by repeated tests, coextensively abolished. This area is shown in the darkened outline made from a photograph of the patient after the anæsthetic region had been marked out with nitrate of silver. (Figs. 8 and 9.) The

FIG. 8.



Case VII. Showing area of anæsthesia and fistulous openings.

FIG. 9.



Case VII. Showing anæsthesia.

cutaneous extent supplied by the lumbo-sacral cord and first sacral nerve are absolutely free from sensory disturbance.

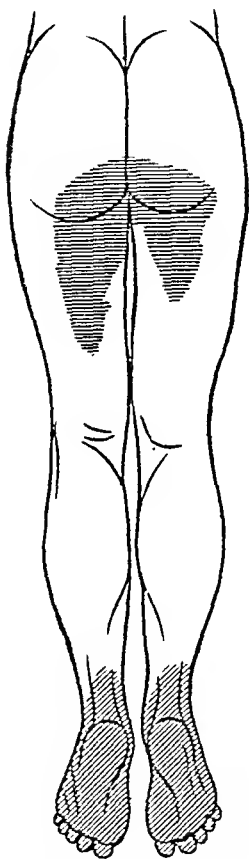
All the muscles of the lower extremities react to both electric currents, with no changes in the order of response to the galvanic stimulus, but the muscles of the feet, including the calf muscles, respond feebly. Unfortunately, the rotators of the femur, which are supplied by branches from those sacral nerves which show implication in their cutaneous distribution, are so deeply situated that they cannot be electrically examined, but their paresis is shown in the characteristic gait and the weakness of inversion and eversion of the foot.

The lower portions of the glutei maximi seem wasted, and the trochanters are, perhaps, unduly uncovered and prominent.

The knee-jerk is almost abolished, while the plantar and gluteal reflexes are entirely absent. The cremasteric is active, and reflexes above this level are present.

The anus is patulous. The introduced finger encounters no sphincteric resistance whatever, and the patient cannot feel it in the slightest degree, even when deeply and forcibly inserted. The rectum is empty, as is the bladder. The prostate and seminal vesicles can be readily

FIG. 10.



Case VII. Showing diminished area of anæsthesia after operation.

made out. There is great mobility of the coccyx, and grating at its articulation with the sacrum, but the latter bone does not present any abnormality to the investigating finger on its concavity, even as high as the promontory.

A diagnosis of injury to roots of lower four sacral nerves was made by Dr. Church, in which Dr. Sanger Brown, who kindly saw the patient, concurred, and an exploratory operation was advised in the hope that some pressure might be relieved, or, possibly, nerve suture be employed, and, at the same time, to close the ulcerating openings and rectify the diseased condition of the sacro-coccygeal joint.

September 26, 1890, under ether, by a median incision the spines of the sacrum were uncovered by Dr. Frank, and the fistulous opening over the coccyx included. This bone, or a small carious portion of it, was dissected out. The sacrum seemed strangely distorted, presenting about its middle a loss posteriorly, and when this was invaded with chisel and mallet no neural canal could be found. It was as if the bone had been crushed, impacted, and hypertrophied. At the lower level of the first sacral vertebra the spinal canal was found and the crushed-off termination of the dural sheath and cauda equina. The nerve roots of the cauda extending below this level were completely destroyed, or, at least, no trace of them could be found. Hemorrhage from the bone and soft parts was everywhere profuse, requiring much time for its control, and the portion of the bone removed showed inflammatory changes and infiltration. A fragment of the sacrum, probably including its two lowest segments,

was found loose and came away, giving high access to the posterior wall of the rectum. The fistulous opening in the left buttock was also widely opened, and a saccular lining full of cheesy material dissected out. The cicatricial margins of both openings were trimmed away, and the parts closed with deep sutures.

October 19th. There is great improvement in sensation. About the toes it is blunted to some extent, but not absolutely; everywhere else it is normally acute, excepting in the gluteal region and the upper back

portion of the thighs, the perineum, scrotum, and under portion of penis. (See Fig. 10.) The penile meatus and anterior urethra are comparatively insensitive, but the anus responds to pricking, has some muscular sphincteric control, and motions are felt when he goes to stool. Movements in the right lower extremity are well performed, but below the knee on the left side there is complete motor paralysis, probably due to the breaking of a nerve-cord at the time of operation. Since the operation there has been much loss of weight, and the same atrophy in the gluteal region and throughout the lower extremities is present. The wound over the sacrum healed completely by first intention. The one over the left ischial tuberosity gapes widely, but is granulating freely, and seems disposed to heal. The peculiar saccular condition before noted is still present.

November 9th. Anæsthesia practically the same. Left leg and foot paralyzed for all motions, excepting the slightest lateral motion of foot at ankle-joint. Has had several erections. No ejaculations. More security in the hip-joints; gaining physically. Opening over left tuber ischii shows no tendency to close. Is receiving some electrical treatment of indifferent sort.

Four months after operation he left the hospital, with no improvement in gait, and power in left limb less than upon admission, but sensation much improved by the notable lessening of the anæsthetic area, and by the restored sensation and control of rectum and anus.

It is difficult to understand why there should have been a gain in sensation following the operation for the complete division of the cauda; and disappearance of all nerve structures below the first sacral vertebra did not permit us to hope for any repair or restoration of function.

CASE VIII. *Fracture of tenth and eleventh dorsal vertebræ, with dislocations between them; compression of cord; extra-dural hemorrhage; operation; excellent recovery.*—J. K., aged thirty-one years, teamster, German, about 10 A.M., on the 11th of March, 1891, was riding on a load of bricks, and while driving under a low shed was struck just below the nape of the neck while his body was in an extremely stooped position. As the wagon proceeded the ends of his vertebral column were brought nearer to each other than the anatomical continuity would permit, and, consequently, he sustained a fracture and dislocation of the vertebræ. He felt "something break," and after the wagon had cleared the shed he was found lying flat on his back on top of the load. He tried to get up, but found that he could not elevate his trunk or move his legs at all. In answer to his cries, friends came to his assistance, and lifted him from the wagon and tried to stand him up, but his legs would not support him; then they tried to sit him up in a chair; but the slightest relaxation of their support caused him "terrible pain," as he put it. He was admitted to the Cook County Hospital the same day, in the service of Dr. A. I. Bouffleur, who permits us to report the case.

Examination. An immense swelling over the whole dorsal region was noted, also a marked deformity of the back. It was found that there was a marked prominence about the eleventh vertebra, and an equally marked depression just above it. The immense diffuse swelling was soft and semi-fluctuating, being caused by extensive extravasation of blood

throughout the subcutaneous tissues. Palpation at the point of injury caused severe pain. The blood-clot beneath the skin was so extensive and thick that it was impossible to determine positively the presence of crepitus, though at times we thought we could detect it. There was complete motor paralysis below the umbilicus, including paralysis of the bladder and rectum, with hyperæsthesia of the corresponding surface. There was no reason to doubt that we had compression of the cord. Reduction by extension and counter-extension was very cautiously attempted, and, as there was a probability of an accompanying hemorrhage about the cord, an operation seemed the only rational and scientific procedure. There had been no improvement whatever in the five hours following the accident. The patient readily consented to an operation, which was performed about seven hours after the accident, with the valuable assistance of Drs. Bush, Piper, Gehrmann, and Keyes.

Chloroform was administered with the patient in a semi-prone position. An incision five inches long was made in the median line. After cutting through the superficial fascia, which was distended to the thickness of about one and one-half inches by extravasated blood, we found that the muscles of that region, the vertebral aponeurosis and all the inter-vertebral ligaments, had been ruptured transversely—in fact, broken. The tenth vertebra was found dislocated forward upon the eleventh, the laminae of the tenth resting on the body of the eleventh, with the flattened cord between. Fractures of the articular processes, fragments of which were removed, were found. The introduction of the finger down to the cord determined the fact that the spinal canal was filled with a firm, extra-dural blood-clot, which was easily broken down. Considerable hemorrhage followed the withdrawal of the finger. Irrigation with quite warm sterilized water served the double purpose of washing out the clots and stopping the hemorrhage.

The anterior and posterior longitudinal spinal veins, the former of which are, normally, nearly the size of a crow's quill, had been severed. The interval between the transverse processes of the two vertebræ easily admitted the finger, which detected a large blood-clot anterior to the bodies of the vertebræ in the posterior mediastinal space. It was removed by irrigation. All hemorrhage having been controlled, reduction was effected by following the rule which the late Professor Gunn offered concerning reduction of dislocations of the hip, and which is quite as applicable in all dislocations as in those of the enarthrodial joints, viz.: "First place the parts, as nearly as possible, in the position in which they were at the time of escape; and second, reverse the force." This was followed as much as possible, by first flexing the trunk, and secondly making extension and counter-extension from the shoulders and legs, and local elevation of the upper segment, with depression of the lower. The vertebræ were thus brought into position, but the articular processes would not approximate properly, and on slight motion of the body would slip past each other. To maintain the parts in proper position the two spinous processes were connected by means of a very large silk ligature, inserted through drill perforations of the upper part of the tenth and lower part of the eleventh near the laminae. By this means we were enabled to completely reduce and maintain the segments in proper coaptation.

The torn ends of the muscles were then accurately coapted by means of silk, tube drainage employed, the wound dressed, and a plaster-of-

Paris cast applied. The patient remained in a prone position, with upper part of chest and shoulders somewhat elevated, until the cast had dried.

There was nothing particularly irregular in the history of the case during the stage of wound-healing and complete repair. He had involuntary bowel movements for two days and had to be catheterized for a similar length of time.

During the second twenty-four hours had a temperature varying from 90° to 101.2° , with rapid and labored respirations, 32 to 36 per minute. He felt very well, however, and took abundant nourishment. We considered the symptoms as indicating only fermentation fever, and as the kidneys were secreting an abundance of urine we did not think any medication necessary.

On the morning of the 13th, forty hours after the operation, voluntary use of the gluteal muscles was present to a slight degree. Twelve hours later he could rotate the limbs quite freely and could adduct them about eight inches each.

March 14. No bowel movements. Could urinate voluntarily. Morning temperature normal; evening, 101.2° . Respiration 20 to 24.

16th. Began to have voluntary bowel movements. Motion manifest in the flexors of the toe. As there had been a little rise of temperature for thirty-six hours (99° to 101.2°) it was deemed advisable to dress the wound. A fenestra was cut over the site of the operation. The dressings were found saturated with a reddish-colored fluid. No odor of decomposition. Ends of tubes occluded with blood-clots; no evidence of blood-clots deep in the tubes or wound. Irrigation with sterilized water and new dressings applied.

The bowel movements having soiled the cast, it was removed on the 20th. Wound perfectly clean and union by "primary intention." Drainage tubes removed and new cast applied. There being no rise of temperature or other unfavorable symptom, the cast was allowed to remain on four weeks.

Five and one-half weeks after accident, cicatrix found to be firm. No discharge, and only small bunch of exuberant granulations over drainage holes. These were removed, and surfaces healed within a week. During this week he remained in bed without a cast. About May 1st a cast was applied, and he was allowed to be around in a wheel chair, and then with crutches, which he continues to carry merely as a means of safety to prevent any mishap. The last cast was removed about the middle of June, and the patient has practically every control of his lower extremities.

As "the proof of the pudding is in the eating," so the proof of the justifiability of an operation is in the pathological conditions found and the success of the efforts for their removal. In this case we encountered three important pathologico-etiological conditions which we were able to remove. First, small fragments of bone, which, as before stated, might cause a fatal inflammatory process; second, extra-dural extravasation of blood. Hutchinson states that "he has never seen it to the extent of possible compression," but Oldknow, Stephen Smith, Jones, and Willett have reported cases in which extravasation of blood was the cause of

compression. In this case the spinal canal and the surrounding parts were filled with firm blood-clots, and it is not believed that reduction simply would have relieved all the compression. As a result of operating we were able to effect a complete reduction of the articular processes as well as of the bodies of the vertebræ, and to employ efficient means for the maintenance of the reduction, and also to make an anatomical coaptation of the divided muscles, etc., all of which, of necessity, add to the appearance, strength, and usefulness of the spine.

June 20th the patient was exhibited to the Chicago Medical Society, and was able to walk with tolerable firmness. The back showed no deformity or limitation of flexibility, and the result seemed most excellent. At this date, November, 1891, the condition is still most favorable.

In all these cases it will be noted that the only uniform and constant symptom of value in localizing the injury to the cord was the area of perverted sensibility and especially its upper limit, and further, that this limit in the upper thorax, as a rule, is transverse rather than in the line of the ribs.

ECHINOCOCCUS MULTILOCULARIS OF THE BRAIN.

BY HENRY H. MUDD, M.D.,

ST. LOUIS, MO.

Swelling over right Rolandic region; hemiparesis, with tremor; left-sided hemianopsia; choked disk; removal of an echinococcus cyst; hernia cerebri accompanied by high temperature; disappearance of both by pressure; complete recovery.

D. A., an unusually large and well-developed girl, aged twelve years, presented herself, in March, 1891, for treatment. At my request she entered St. Luke's Hospital. Her parents stated that she had always been a robust, strong-willed, and somewhat irascible child. The first evidence of her present trouble was a severe, diffuse headache, which commenced in the latter part of July, 1890. This continued for several weeks. The child would frequently stop playing, lie down until the pain was easier, and then get up to resume her play. She was not confined to bed an entire day during the continuance of the headache.

In the first week of October a small elevation of bone, about the size of a silver quarter, was observed above the right ear. The headache disappeared before the tumor was noticed. The swelling by firm pressure could be indented. On ceasing pressure it returned to its place with a snap, like thick, elastic paper or the bottom of a tin pan when pressure is alternately made and released.

Before this swelling appeared the left hand and arm twitched and trembled. The parents stated that the tremor was confined at first to the hand. Soon after this tremor was noticed the mouth during laughter

was drawn to the right side. Later both the head and leg began to twitch and tremble. Thus, according to the history, the twitching commenced in the hand, became diffuse, involving the entire left side, the face, head, neck, and leg becoming implicated. The mother asserts that the walk is better now than it was during the early winter, the twitching in the leg being also much less.

Present condition (March 14, 1891): The child has quick perception and good reasoning powers. There is an active twitching of the left side of the body. This tremor is rarely noticed in the facial muscles, but is pronounced in the platysma and the neck. The head is turned slightly to the right. The left angle of the mouth is depressed. The facial muscles on that side are sluggish and feeble. The impairment is not as marked in the upper part of the face as in the lower. The case is one of well-marked hemiparesis of cerebral origin complicated with tremor.

The pupils respond readily to light, and accommodation is good. There is left-sided homonymous hemianopsia. Smell and hearing, so far as determined, are normal. There is no gastric disturbance; no vertigo and no headache since August. She complains occasionally of the left side being cold.

There is an oval swelling above the right ear. The central point is elevated fully one-half an inch above the level of the skull. The scalp is normal, and is not infiltrated or inflamed over the protuberant area. A horizontal line around the skull a little above the external angular process passes over the tumor, and the right half of this line is three-quarters of an inch longer than the left. The base of this swelling measures in vertical diameter three-quarters of an inch (two cm.) and its horizontal diameter two inches (five cm.). The apex of the swelling is two and one-half inches above the external auditory meatus.

The motor area first involved by the growth was evidently the centre for the wrist and fingers in the middle third of the ascending parietal convolution. The size of the tumor, the amount of brain-tissue displaced, and the pressure established, implicated the entire left side in loss of motor power. The tumor could be seen and felt. Cerebral localization was unnecessary.

I extract from a report made by Dr. Frank Fry, who carefully examined the child: "Patient has a left hemiplegia; face and neck (slightly) and upper and lower extremities are involved. Eye is slightly affected; the lower part of the face much more. Tongue protrudes straight. She can extend the left hand (wrist) to right line. Relative grip of two hands by dynamometer is: right, 60; left, 40. Has a hemiplegic gait, foot being circumducted and the toe scraping slightly in walking. Can flex the foot (ankle) slightly. There is a slight talipes varus. Measurements of extremities are as follows:

"*Arm*: Dext., 4 inches above external condyle of humerus, $9\frac{1}{2}$ inches; sin., 4 inches above external condyle of humerus, $9\frac{1}{4}$ inches.

"*Forearm*: Dext., 4 inches above styloid process of ulna, 8 inches; sin., 4 inches above styloid process of ulna, $7\frac{3}{4}$ inches.

"*Leg*: Dext., 4 inches below head of fibula, $12\frac{1}{2}$ inches; sin., 4 inches below head of fibula, $12\frac{1}{4}$ inches.

"The muscles of the neck, of the upper and lower extremities, are in a condition of rhythmic spasm and tremor. This is only slight in the neck, greater in the leg and thigh, and greatest in the arm, forearm, and shoulder (in order named). The spasm is increased by voluntary

movement; greatly so in the upper extremity. Knee-jerk slightly increased on the left."

Dr. J. B. Shapleigh, examining the ears, reports them almost normal, and says that "there is no evidence that the function of the auditory nerve is at all interfered with by the cerebral trouble."

Dr. M. H. Post found "optic neuritis, the swelling of each disk amounting to four dioptics. Also, a loss of vision in the left half of each field (homonymous hemianopsia) corresponding to the right half of each retina to the vertical median line. Nothing in the condition of media or fundus of either eye to account for this defect. (Before the operation vision in right eye = $\frac{14}{XVI}$, some hesitancy, and in

the left eye = $\frac{14}{XVI}$, prompt and accurate.) Pupils react well both to light and accommodation.

Ten days after the operation, vision in right eye = $\frac{14}{XII\frac{1}{2}}$, and in the left eye = $\frac{14}{XIII}$. Condition of each fundus as at first examined, and hemianopsia still present.

The anatomico-pathological diagnosis was uncertain, but we suspected a sarcoma. The temperature on the day before the operation was 100.4°, though she appeared well in other respects.

Operation. The patient having been properly prepared—antiseptic precautions being taken—the operation was performed March 20, 1891. A large, oval flap of the scalp and periosteum, with its base above the ear, was reflected from the skull. The bone was incised by a chisel, and an oval flap outlined with the bone-pliers. This flap was turned downward; the bone was thin and pliable and did not break. The periosteum was closely adherent to the elevated area. The dura was attached to the bone, but was loosened; it was evident that a fluid separated it from the brain. There was no pulsation perceptible either to sight or touch. The dura was incised, and a clear, watery fluid escaped. The opening was enlarged, and a collapsed cyst was lifted from the opening. Many cysts of varying sizes were removed, with their contents. Finally, a translucent membrane was exposed at the deepest part of the depression in the brain; it looked like another cyst, and was purposely punctured. It was probably the ependyma ventriculi, for the lateral ventricle was opened and drained; the flow of serum was free, and continued seventeen days.

The excavation in the brain left by the removal of the cysts was cleared of the fragments of the cysts-walls by a blunt curette used as a scoop. The brain was not bruised. This deep excavation, as large as a hen's egg, retained its outline. The cavity of the lateral ventricle being dilated was well exposed. The outlines of the convolutions were obscured; but, as nearly as I could determine, the temporo-sphenoidal convolutions were pushed downward and backward. The cavity occupied the greater part of the lower two-thirds of the Rolandic region.

A gauze drain was left in the opening in the dura and carried out through the bone and the scalp. The bone-flap was put into position, and the scalp sutured in place. The abundant antiseptic dressings put

over the wound were held by a roller bandage which exerted moderate pressure.

The patient bore the operation well. There was no apparent disturbance from the escape of the cerebro-spinal fluid.

There was no evidence of inflammation of the parts involved, except in the adhesion of the dura mater and pericranium to the thin and distended parietal bone.

Notes from Case Record. March 20, operation at 1 P.M. Present: Drs. Gregory (senior and junior), Dr. N. B. Carson, Dr. Frank Fry, Dr. L. Bremer, Dr. E. F. Smith, Dr. Harry Hodgen, and Dr. Harvey Mudd.

20th (five hours after operation). Dressing is saturated with moisture. Left foot and heel itching. Less motion in arm. Sweating.

21st. Arm quiet, except as muscular effort brings twitching. Tent removed. Pulsation evident over the site of the protuberance.

23d. Vomited several times to-day.

24th. Can move arm without tremor.

25th. Moves arm without tremor.

April 4. Twitching of arm more marked during last day or two. Serous discharge has been less.

7th. Dressings dry. There has been a diminishing discharge of serum. Has been no suppuration. A soft swelling appeared at the site of opening in the skull two or three days after the operation. It is now quite marked, more tense, and pulsates.

20th. Arm twitches even when patient is quiet.

21st. Arm twitches almost constantly.

24th. Right side of face and scalp much swollen.

25th. Wound was reopened. The mass proved to be a hernia cerebri protruding through the opening in the skull. The hernia was explored with the aspirator. No fluid was obtained, and no evidence of a re-development of the cystic growth was discovered. The scalp was again sutured and the wound entirely closed after freshening the edges. Firm pressure was put upon the hernia. This exploratory operation did not disturb the patient. The wound healed perfectly in a few days. The firm pressure put upon the hernia soon controlled it, and the patient's general condition rapidly improved. The hernia had a base of nearly two inches diameter and an elevation of at least an inch.

30th. Patient for first time wants to get out of bed. Walked about the room.

May 1. Patient is hungry all the time.

7th. Discharged from the hospital.

The surface temperature of the body and extremities was not taken. The temperature for a few days before the operation was recorded. Only once was it observed to rise above 100°; this was on the day before the operation. On the day of the operation the morning temperature was 99°; at 9 P.M. it was 102.4°. Most of the time for the succeeding thirty-five days it fluctuated between 100° and 103°. The changes were at times rapid and always uncertain. On the twenty-second day, for the first time, a normal temperature was recorded, but on the same day it reached 105.4°. This fever did not appear to distress the child; the tongue remained clean, the appetite good, and the loss of flesh was not great. The child slept much, but was bright, though irritable when

disturbed, and she had no desire to get up. Pupils reacted well, and were rather large.

The swelling at the site of tumor reappeared after the first operation before the primary dressing was removed; it pulsated, and was soft; it increased in size, and at points the scalp appeared thin, and fluctuation was evident; I punctured at different points, and serum escaped freely; drainage from under the scalp and from these punctures did not cease until the seventeenth day. I feared the fever was due to pressure from a serous exudate from the ventricles or to an inflammatory process, though no other evidence of wound disturbance was present. Hence, the support given to the hernial protrusion was insufficient and more or less intermittent. The patient was irritable, and complained bitterly of a tight bandage. On the thirty-fifth day, with a temperature of 102.8° , the scalp was lifted from the skull and the tumor sufficiently exposed to reveal its true character as a hernia of the brain. The aspirator was used at several different points with a negative result. Being now satisfied of the condition, a pad, with firm pressure from a bandage, was applied. The temperature promptly subsided, and the next day reached 99° . Thereafter it was normal, and the patient was discharged well eleven days later, or May 6, 1891.

The prompt disappearance of the fever was evidently due to the pressure and control of the hernia cerebri. It is now evident to me that prompt and efficient pressure would have hastened the recovery of my patient. It is probable that irritation of the motor area and the corpus striatum determined the abnormal heat.

Etiology of tumor. The patient lived in the country, and had for a playmate a shepherd dog with which she spent much of her time. The dog was killed in 1889, so that the infection of the patient, if from this source, must have occurred at least one and one-half years before the operation. But it was only eight months from the initial symptom to the date of the operation. It is possible that some of the larvæ may still remain as a focus for a redevelopment of this parasitic cyst.

The prognosis is, however, good, as other cysts of the same character have been cured simply by aspiration.

A considerable quantity of the fluid from the cysts was lost, but the portion saved, together with all of the cyst-walls, was given to Dr. Ludwig Bremer for examination. The specimen removed and some microscopic slides were presented for inspection.

Dr. Bremer's report, together with remarks on the neurological aspect of the case, he has kindly added to this history.

September 16, 1891. The patient presented herself for examination to-day. She has worn a truss over the defect in the skull up to the present time. There is no disposition to protrusion of the brain, and the place of operation is marked by a slight depression. The thin flap of bone which was preserved and turned back is still perceptible to the touch in its original size.* The pulsation of the brain can be felt at the

upper crescent of the defect through the integument whenever the head is in a dependent position.

The paralysis and irritative disturbances have disappeared. Her gait is perfect; she is able to hop on the formerly affected (left) leg. Uses her left hand with ease and strength. Facial expression is natural. No trace of tremor. Reflexes normal.

Dr. Post, after a final examination, reports that the optic neuritis has disappeared; bloodvessels still a little enlarged. The hemianopsia is disappearing, the field of vision being nearly normal.

This complete recovery from the effects of a defect of such size as that described above is, perhaps, without a parallel in cerebral surgery. If we consider that a prolapse of the brain of such magnitude always means more or less necrosis, and occurring in a highly differentiated region of the brain, as this did, it is certainly remarkable that a complete restoration to perfect health should have taken place as evidenced by the absolutely normal condition of the organs affected by the morbid process.

LITERATURE (BY DR. BREMER).—Hydatids of the brain are comparatively rare. T. S. Cobbold (*Parasites of Man and Animals*) found that among 327 cases of hydatids known in literature, 22 occurred in the brain. The organ of predilection for the parasite is the liver.

Up to the year 1883, 19 cases of echinococcus of the brain had been registered by A. Steffins as post-mortem findings. Since then about 9 others have been reported, 3 of which are not based on autopsies only, but gave cause for operative interference. Of these, as will be seen, only 1 recovered.

Dr. A. Castro,¹ of Buenos Ayres, trephined a boy of fourteen, with localizing symptoms, over the Rolandic region, for a progressive atrophy and paralysis of both extremities of the right side; pain on left side of the head. Two cysts were found—one the size of a walnut, the other that of a hen's egg. The patient died from basilar (?) meningitis.

Another case was operated on by J. C. Verco.² The patient was a boy of eleven years. At first, pain in right temporal region; later on, protrusion of bone. Choked disk, mydriasis, attacks of unconsciousness, with spasms in the left arm. The patient was already much reduced in strength when consent to operation was given.

After the cyst had been removed a very large cavity remained. The wall of the cyst was formed by a thin layer of brain substance. The child died from purulent meningitis, which probably had existed before the operation.

The third³—and, previously to the one under discussion, the only case recovered after operation—is reported in the *Australian Medical Journal* for July, 1890. Dr. Graham and Mr. Grubbe diagnosticated, in a boy of

¹ Jahrb. ür Kinderheilk., Bd. xx, Heft 1.

² Annales del Círculo Medico Argentino, October, 1889.

³ "Hydatid of the Brain; Removal by Operation; Death after Four Days." Intercolonial Medical Congress of Australasia: Transactions of Second Session, held in Melbourne, Victoria, January, 1889. (After Neurolog. Centralbl., 1889, p. 443.)

sixteen years, presenting the symptoms of headache, nausea, vertigo, vomiting, loss of memory, mental dulness, and paresis of the right arm, a tumor in the left motor area.

The bone when removed was only one-sixteenth of an inch thick, and a cyst four inches long was found upon the pia mater, and removed. The brain itself was not involved; the boy recovered and remained well, except for his blindness.

POINT OF COLONIZATION AND DEVELOPMENT OF THE PARASITE IN DR. MUDD'S CASE.

The starting-point of the parasitic growth was most probably on the convexity of the brain, over the centre for the wrist and fingers, in the subarachnoidal space. Since the sac extended through the whole of the centrum ovale into the lateral ventricle, it might be assumed that possibly it developed from the latter, and thence grew and spread toward the convexity, for the ventricles form a seat of predilection for echinococcus of the brain; next comes the subarachnoid space. But the intra-ventricular origin of the growth is rendered improbable by the clinical course of the case.

Localized irritative symptoms (twitching of the hand) manifested themselves first, pointing to a circumscribed area of the cortex; with the encroachment of the increasing tumor upon the subjacent conducting fibres paralytic symptoms set in. Again, the shape of the defect speaks in favor of a development from the periphery to the mesial plane. The shape of the sac, as outlined by the hole in the brain, was that of an egg—oval in the strict sense of the word—the apex being toward the ventricle, the base toward the convexity. Thus, for simple morphological reasons, the subarachnoidal origin of the tumor seems to be the more probable one. Growing from the periphery it pushed its way toward the centre. Whereas, during the first period of its development, there was an effort on the part of the tumor to corrode and discharge through the skull-bone, this outward march was checked for some unaccountable reason, after the inner table and the diploë had been destroyed and the outer table had been reduced to a thin lamina not much thicker than an eggshell.

DEFINITION AND CAUSATION OF THE CLINICAL FEATURES.

It might appear singular that a tumor larger than a large-sized hen's egg should produce no graver symptoms than it did, and that the hand and arm should be found only in a state of paresis, when the region of the arm and hand centres, and apparently their conducting fibres, were occupied by a foreign mass. Another question is the nature of the irritative symptom—the tremor.

The first peculiarity, the partial paralysis, seems to be explicable on

the following grounds: The tumor grew very slowly; it did not involve the brain directly, but, with its pointed extremity directed in the axis of its growth, it pushed the fibres of the brain substance asunder, compressing rather than destroying them. Supposing even that the cortical centres for the fingers, hand, and arm were destroyed, the slow growth of the parasite gave the surrounding cortical areas a chance to vicariously¹ assume the functions, at least partially, of the destroyed centres. As to the conducting fibres of the corona radiata, they were, no doubt, atrophied by pressure to some extent, but enough remained to carry on the conduction. The general involvement of the whole left side of the body did not depend so much on a cortical destruction as on that of the conducting fibres. The apex of the tumor struck them at a point of convergence, where they unite to form the internal capsule.

It is on this ground, too, that the irritative symptom—the tremor—has to be explained. This tremor partook very much of the nature of the kind met with in cerebro-spinal sclerosis. The anatomico-pathological substratum of this affection is the sclerotic patches in the pyramidal tract of the brain (centrum ovale) and spinal cord. The interruption, or, at all events, the impairment, of conduction in the converging motor fibres must, in this case, too, be looked upon as the cause of the tremor. Like that observed in sclerosis, it was an intention tremor, increasing in proportion with the efforts at movement.

It may not be amiss to state here that the case reminded one somewhat of chorea electrica.

Eye symptoms. Besides the choked disc, which was a general pressure symptom, due, no doubt, to the dropsical condition of the ventricles, there was the localizing one of left homonymous hemianopsia. From the nature of the lesion it is clear that this was basal in origin. In its gradual growth from the convexity toward the ventricle the cyst could hardly fail, considering its size, to exert pressure downward, beyond the basal ganglia, and impinge upon the optic tract. The point of pressure must have been behind the corpora geniculata, for the promptness with which the pupils reacted to light and accommodation showed that the latter (being the reflex centres of the iris) were not involved by the pressure and remained intact. The tract behind the corpora geniculata, however, between these and the cortical visual centres, was entirely interrupted, for the hemianopsia was complete. Central vision, however, was good.

Headache. That a tumor of very considerable size may exist in the cranial cavity without giving rise to headache has time and again been observed in cases of this class. But here we are confronted with the

¹ I am well aware that this substitution theory is still a mooted point, but clinical evidence speaks in its favor.

apparently paradoxical phenomenon that, with increasing size of the growth causing the pain, the latter ultimately disappeared. In spite of the very pronounced "descending neuritis" giving evidence of general brain pressure, there was in the latter months of the development of the tumor not a trace of headache. This feature of the case might be explained by assuming that in the beginning, when the pressure of the developing echinococcus was brought to bear directly upon the sensitive nerves of the dura mater, pain was the result of irritating the living nerves of that membrane; that these latter in the course of time became necrosed by the ever-increasing pressure, and that thus the pain ceased. This is, of course, not to be regarded as an explanation, but only as an attempt at such, of the difficult and obscure problem of the genesis and nature of the headache in some cases of intra-cranial growths.

Reflexes. Of the superficial reflexes only the plantar was tested. It was found to be present.

The knee-jerk could be elicited on the unaffected side with difficulty, and was slightly exaggerated on the left.

Examination of the mass removed. Besides the common sac, which was torn and broken up in shreds by the scraping process resorted to in the operation, there were a number of larger and smaller vesicles, the total mass constituting about a handful of material. Under the microscope the characteristic scolices of echinococcus could be shown. They were abundant, and were demonstrated in the living state at a meeting of the St. Louis Medical Society, March 21, 1891.

It is difficult to make even a rough estimate of the number of heads contained in the whole mass, but, judging from the abundance of brooding capsules found, almost all of which contained living parasites, the specimen must have contained many thousands of such heads. Many of these were, no doubt, set free by the rupture of the capsules produced during the operation. Their failure to re-develop is possibly to be accounted for by the not inconsiderable discharge of cerebro-spinal fluid due to the puncture of the lateral ventricle. The mass of the fluid was probably sufficient to wash them away and carry them outside of the cranial cavity.

Time and manner of infection. The time could not, of course, be established with any degree of certainty. It probably does not date back much over a year previous to the operation. The handling of the diseased (and undoubtedly infected) dog, which could be demonstrated as the more than probable cause of the infection, shows once more the great danger to which children are exposed when allowed to fondle dogs.

The fact that the echinococcus occurs most frequently in communities (e. g., Iceland) where people live in close contact with these animals should be heeded more than is done at present. Owing to the scarcity of post-mortems in our country the number of echinococcus infections,

whether of the brain or other organs, is impossible to estimate. But I believe it is not overstating the case when I say that only a minimal percentage of echinococcus infections in children are diagnosticated or even suspected, and that more obscure affections are due to the invasion of the organism by this parasite than is commonly believed. I have no doubt that with legitimate brain surgery becoming more widely disseminated and understood by the generality of surgeons, more cases will come under observation within the next few years than one would, at first thought, be inclined to believe. The cases of operative interference for echinococcus of the brain have all occurred within the last few years. It is, perhaps, needless to call special attention to the fact that in all of them the patients were young people.

Thermal abnormalities. There was an elevated temperature before and after the operation. According to the researches of Ott,¹ Hughlings-Jackson, Sawadowski,² W. Hale White,³ and others, the chief heat-producing centres are in the corpus striatum and in the cortex around the Rolandic fissure. Both of these heat centres were implicated in this case. The temperature was highest (105.4°) when their disturbance was greatest—*i. e.*, when the hernia cerebri had reached its greatest dimensions. The rapid fall and return to the normal so promptly after the pad had been applied is very instructive, and amounts almost to the precision of a physiological experiment. No attempt was made to ascertain the existence of any difference of temperature between the right and left sides.

It is, perhaps, of some interest to call attention to a case mentioned by Sawadowski,⁴ and reported by Bagojawlensky, in which a high temperature in a patient could be explained post-mortem only by the existence of echinococcus cyst in both the corpora striata.

THE PROGNOSTIC FEATURES OF THE CASE.

Instances of spontaneous discharge and cure of cerebral echinococcus through the cranial bones—the convex walls as well as the base of the skull—through nose and mouth, have been reported. Cases of cerebral echinococci discharging into the ventricles and thus causing death are also on record. In this case, judging from its clinical course and the condition revealed by the operation, death of the child would have been only a matter of time. The sac had been constantly enlarging, and, instead of making any further inroad by corrosion upon the skull-bone

¹ Journal of Nervous and Mental Diseases, 1888, xiii. p. 85; January, 1889.

² "Zur Träge über die Localization der Wärme-regulirenden Centren," etc., Centralbl. d. med. Wiss., 1888, Nos. 8-10.

³ "On the Parallelism Between the Three Thermic Mechanisms and Dr. Hughlings-Jackson's Three Levels," Brit. Med. Journ., 1890, p. 949.

⁴ Mentioned in the article sub. 2.

it delved down into the brain substance, and, as stated above, only a translucent membrane—possibly the ependyma—separated it from the ventricle.

Fortunately, the hydrops of the ventricle was only beginning, the descending neuritis only moderate, central vision still good; so that, in this respect, the termination was a happier one than in the only other successful case extant—that of Graham and Grubbe, whose patient remained blind.

It was, likewise, a favorable feature in our case that no epileptic disturbances had as yet manifested themselves. However successful an operation may have been, the epileptic change in the brain substance is ever to be dreaded as soon as a well-pronounced epileptic seizure has once taken place. Nothing of the sort, not even unconsciousness, had ever been noticed.

That no mental impairment took place is, as a matter of course, due to the location of the lesion in the right hemisphere. A like defect in the opposite one would doubtless have left a considerable degree of mental failure behind.

STREPTOCOCCUS OSTEOMYELITIS IN CHILDREN.¹

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I. ETIOLOGY.

BY HENRY KOPLIK, M.D.

THE class of cases dealt with in the investigations to be spoken of in this paper are not uncommon, nor do they appear here for the first time. They are scattered throughout medical literature. Strange to say, it is not until a comparatively recent date that we can note any attempt to describe and classify them under a heading in accord with our modern views and ideas. The etiology of the cases included in this paper has been variously linked with sepsis, pyæmia, and the vague term of infection. It would seem at the present day that we could sift a satisfactory conception of sepsis or pyæmia from the immense mass of accumulated work, both experimental and speculative, of our literature. On the contrary, our work in this direction is still formulating. The most original minds have hesitated to reject previous theories, and refrained from inventing new formulæ in order not to make apparent confusion still greater. This state of affairs arises from the great dif-

¹ Read before the New York Academy of Medicine, December 17, 1891.

ficulty encountered when we attempt to apply the experimental results obtained in animals to the human subject. Robert Koch, in his classic brochure upon wound infection, has hesitated to introduce new terms into our nomenclature. In doing so he has simplified to a very great extent the application of sepsis and pyæmia. He retains the early definitions of Davaine. Septicæmia and pyæmia will thus include all diseases the result of any wound infection. Septicæmia is a term which he applies to all cases of general traumatic infection in which no metastatic deposits occur. Pyæmia is applied to those diseases in the course of which these may be present. Confusion had hitherto resulted from a variety of conceptions upon the nature of sepsis and septicæmia, which included the active coöperation of some putrid matter and its introduction into the circulation. Thus we have the term *sapræmia* (Mathews Duncan). Cohnheim and Birch-Hirschfeld have also appealed to this active element of intoxication in cases of septicæmia and pyæmia.

With the development of our ideas upon the processes named above, we have not as yet eradicated the traces left by former work. Koch indicated that the line between septicæmia and pyæmia was not so very distinct as some were apt to suppose. For in some cases of septicæmia we may find microscopic metastases identical with those found in pyæmia. Babes insists that *sapræmia* is but a variety of sepsis. Rosenbach includes under his classification of sepsis, first, a form in which the organism is invaded by a ptomaine without the presence of micro-organisms in the blood (*sapræmia* of Ogston, Duncan). The second form includes a bacterial invasion. His conception of pyæmia is not materially different from that described above. The definition of Gussenbauer, that pyæmia is a general infection resulting from the reception into the circulation of the elements of infected pus, is of passing interest in this connection. Nor can we at the present day feel entirely satisfied with that part of Rosenbach's definition of pyæmia which assumes two forms of this condition—one in which a very marked focus of suppuration has preceded, another in which a small focus of insignificant area has preëxisted. Inasmuch as the symptoms of both these forms may differ in severity at times, in other cases this may not be so. It is not surprising to find, therefore, that another term has crept into the literature. In order to group a class of cases which might present symptoms and conditions common to both septicæmia and pyæmia, we have been given the term *septico-pyæmia*. Ogston maintained that septicæmia, pyæmia, and *septico-pyæmia* were one and the same disease, due to micrococcus infection. The forms of *septico-pyæmia* dealt with in this paper are those cases met with in infants and children. They have followed an infection through a wound in the cutaneous or mucous surfaces, at the umbilicus, or elsewhere. They may follow the absorption of micro-

organisms through wounds left by the infectious processes of diphtheria, scarlet fever, measles, or they may follow a pneumonia or empyema. Study has been directed especially to that class of cases in which a certain manifestation of this infection becomes the chief care of the physician and surgeon. The cases referred to are those septico-pyæmias resulting exclusively in arthritic symptoms, joint suppurations, bone infections. It may be repeated with pardonable emphasis that these cases are really traumatic wound infections in the sense enunciated by R. Koch. We find in the early literature of these cases that Orth, in 1872, supposed that those diseases of the newborn connected with puerperal fever were a "mycosis septica." Weigert, at the time, described an umbilical ulcer in one of these cases as covered with micrococci. The study of joint suppurations in infants, following infections and infectious diseases, is so linked with the immense literature upon sepsis of infants that to merely sift the cases of joint suppurations would probably alone occupy the extent generally given to a historical brochure. The masterly lectures of Max Runge upon Diseases of the Newborn contain cases of his own of joint suppurations, and many references to literature of exhaustive nature. I will refer the reader to Runge's work, and satisfy myself with a few very marked examples as they strike the reader of the later literature.

J. Abercrombie presented to the Pathological Society of London in 1881 a shoulder-joint, which was one of several infected articulations in a child that had suffered from empyema following measles. In this case the joints were disorganized and the bones necrotic. H. Ashbey collected 500 cases of scarlet fever, in 12 of which joint complications occurred. In 2 of these 12 cases there was what the author calls purulent synovitis. Litten comments upon these purulent joint complications of scarlet fever. He examined at this time the pus taken from some of these joints, and found cocci and bacilli. In some there was no change in the cartilages, in others erosion, and in others separation of the epiphyses. A little later than this, Brieger, who began to agitate the doctrine of mixed infections, examined the knee-joints of cases of infection of a puerperal nature, and found microorganisms (staphylococci and streptococci) in the pus of the affected joints. He brought to the foreground the theory that in the acute infectious diseases the soil was prepared for the invasion of pus-generating microbes. This, with the investigations of Löffler, who first demonstrated these mixed infections in diphtheria, has an important bearing on a full understanding of these cases, as will be seen from what follows in this study. J. H. Morgan also presented to the Pathological Society of London the case of an infant four weeks old, with multiple articular suppurations. He classified the case as pyæmia, but did not apparently go any further. Hochsinger relates a case of supposed umbilical infection in which no

other history could be definitely established. This infant, twelve days old, presented multiple joint suppurations. Hochsinger found streptococci in the pus of the joints. When Löffler, in the course of his studies upon diphtheria, isolated a streptococcus which caused peculiar joint suppurations when injected into the circulation of rabbits, Heubner published a case in which joint suppurations followed scarlet fever. Heubner examined the pus in the joints of his case, using cover-glass stainings only. He found a chain coccus, which he assumed was possibly identical with the chain coccus described by Löffler (streptococcus articulorum). From the above scattered notices it can be seen how clinicians began gradually to seek a cause for these serious, and at times fatal, suppurations of joints other than the hitherto accepted but vague term of pyæmia, or, as formerly, even the term of rheumatic joint. Strange as the assertion may appear, it is impossible to come away from the study of the work upon the class of cases named in this paper without the impression that attention was diverted from a true appreciation of the exact nature of joint suppurations in this class of septic-pyæmias by a false interpretation given to the classical work of Rosenbach, Becker, and Struck upon osteomyelitis. The class of cases and their complications included in this paper will be shown to be really cases of osteomyelitis, but an osteomyelitis due to a different microorganism than that which engaged general attention in the early history of this bone disease. The first idea of a specific osteomyelitic microbe seemed to pervade all work at this time. If we compare the work of Krause in Volkmann's clinic with that of Lannelongue, Achard, Courmount, and Jaboulay, we see how all these authors were working upon exactly similar cases, but making diverse conclusions. The gradual overthrow of the doctrine of a specific osteomyelitic coccus marks the turning-point in the explanation of joint suppuration and bone affections in the class of cases of which we write. The work of the French school in this field is both classical and convincing. Lannelongue, Achard, and others have proved that not only the staphylococcus isolated by Rosenbach may cause osteomyelitis, but streptococci, as also various other pus-producing microorganisms. I need only point to the recent contribution of Lannelongue and Achard in the *Annals of the Pasteur Institute* to convince the most sceptical upon these points.

Lannelongue and Achard began their work by a discovery of chain cocci in the suppurating joints of infants the victims of puerperal infection. They finally proved the capabilities of this chain coccus in the production of osteomyelitis. These chain cocci, as will be seen, were long known to exist in the pus of these joints. Krause, among others, had proven their existence by modern culture methods; but there is in this latter work the same hesitancy to fill up an unexplained

space in the bacteriology of these cases. The life history of the development of our ideas on the subject of osteomyelitis proceeded along two very distinct lines, and the immense literature can be very much simplified if we keep this in mind in our study. The earlier studies were confined almost exclusively to those forms of this disease which were caused by the microorganism first called by Billroth the staphylococcus, a term adopted by Ogston, Schüller, Nepveu, Rosenbach. The later studies were confined to the peculiar conditions under which the streptococcus or chain coccus could cause the same acute disease. Finally, to-day we have the union of ideas in the doctrine that any pus-producing microbe, even the pneumococcus of Fränkel, may be an active agent in the production of acute osteomyelitis. The universal influence of Pasteur is noticed in the early history of this disease. He, in 1880, identified the staphylococcus already described by Lücke, Klebs, Eberth, in foci of infectious osteomyelitis as identical with the microbe found in ordinary furuncle. Following upon this we have the work of Becker and Struck, and the classical brochure of Rosenbach, upon the osteomyelitis due to the active agency of the staphylococcus pyogenes. The work of Rosenbach influences very greatly subsequent work in this direction. Though Rosenbach found in rare cases the staphylococcus associated with the streptococcus, he did not award to the latter microbe the dignity in the causation of osteomyelitis that he did to the former. He seemed to regard the streptococcus more in the light of a mixed infection. Rosenbach stopped here. The work of subsequent authors, instead of attempting to enlarge that of Rosenbach, rather attempted to narrow it down to an application which could scarcely have been intended by the author. Some investigators seemed imbued with the idea that the staphylococcus of Rosenbach must be regarded as the only causal agent in acute osteomyelitis. This fixed idea seemed to cloud all their work. F. Krause, working at the time in Volkmann's clinic, investigated a number of suppurating joints, as also cases of osteomyelitis. Krause found in a number of suppurating joints, accompanied by destructive processes of the heads of the bones, streptococci. He also found staphylococci in foci of osteomyelitis. Rejecting the cases which showed streptococci as pyæmic or septic, he directed most of his attention to certain micrococci which he regarded as identical with those isolated by Becker and Struck. He made some experiments in which an attempt to obtain artificial osteomyelitis without traumatism, but simply the injection of the above organism into the circulation, failed. He obtained the results published by Becker and Struck by inflicting traumatism and obtaining subsequent osteomyelitis in an infected animal. We know now that these organisms experimented with early in the history of osteomyelitis were probably staphylococci identical with those isolated by Pasteur. Yet the color of a specific microbe given to the subject of acute osteomyelitis by Becker

and Struck was not without great influence. Garre corroborated the work of Rosenbach and Müller later and maintained the presence of the staphylococcus in cases of epiphysary osteomyelitis. Kraske has intimated that in certain cases of osteomyelitis there is a mixed infection, and that future investigations might show that every microorganism capable of producing suppuration could produce osteomyelitis. He mentioned intestinal mycosis also as a source of infection. The history of the study of osteomyelitis due to streptococci (*streptococcus pyogenes*) is most interesting, inasmuch as it is so closely connected with the class of cases upon which this paper is constructed.

These cases have certainly been the subject of study from the time of Pasteur's first publication to the present day. Rosenbach found streptococci in suppurating joints and in bones. He attributed to this organism great destructive powers, and metastatic properties which were not possessed by the staphylococcus. Later on Krause, as mentioned above, also isolated streptococci from the pus of suppurating joints in cases similar to those subsequently studied by Lannelongue and Achard. I have mentioned above the work of Brieger, Litten, Hochsinger, Heubner, to show that these cases were being actively studied over an extended period of time. We owe to the French school the best work upon this division of the subject of osteomyelitis. Though Garre attributed to the *streptococcus pyogenes* the power of producing acute osteomyelitis, and denied that there was any specific microbic influence in this disease, it must be conceded that these ideas were developed experimentally more satisfactorily than hitherto by Lannelongue and Achard, and also Courmount, Jaboulay, and Rodet. It had been demonstrated by Löffler, Babes, Marie Raskin, that the *streptococcus* existed in certain affections as a constant, though perhaps adventitious quantity. It was strongly influential in causing lesions which resulted from the secondary invasion of the economy by this microbe. Babes, in his very convincing work upon septic processes in children following scarlet fever, diphtheria, etc., found the *streptococcus* in the spleen, kidneys, and other organs. Lannelongue and Achard not only found these streptococci in joints of children the victims of infection after birth or infectious diseases, but, with Courmount, Rodet, Jaboulay, turned their attention to the manner of action of these microorganisms in a series of animal experiments. Lannelongue and Achard have but recently, in the *Annals of the Pasteur Institute*, proved to their entire satisfaction that not only could the *staphylococcus pyogenes aureus* and *albus* produce osteomyelitis, but also the *streptococcus pyogenes* and the *diplococcus pneumoniae* of Fränkel and Weichselbaum. These authors succeeded in producing experimental osteomyelitis without previous traumatism with the staphylococcus and streptococcus, a fact not hitherto generally admitted by all authors.

CASE I. *Septico-pyæmia; joint suppurations; streptococcus osteomyelitis.*

January 26, 1891. Female infant aged two weeks; mother had had repeated abortions, and was under treatment, for decidual endometritis, with a mixture of biniodide of mercury. Infant when born and during subsequent week had all the appearance of a well-developed, healthy infant. No eruption of any kind. The umbilical wound did not heal; it became red and inflamed about a week after birth. Ordinary zinc ointment was applied by parents. The nurse, after a few days, noticed at the bath that the infant had pain in the right lower extremity; later on the knee became swollen and painful.

Status: Well-nourished infant, weighing eight pounds; skin of a very healthy hue; no eruption about face, mouth, genitals, or any part of the body suggestive of syphilis; no rhachitis (congenital). The right knee is swollen, fusiform in shape, fluctuating; great pain on manipulation; no other joint affected. Temperature 102°; bowels correct.

Umbilicus presents a suppurating wound, and its vicinity is of a livid red hue; indurated, cord-like structure could be felt running under the skin to the pubes. This was supposed at the time to be the inflamed vein. A needle introduced into the joint withdrew a thin, dirty-yellow pus. At operation (incision and introduction of drain), half an ounce of the same pus was evacuated.

29th. Apparent improvement, less swelling about the joint, less pus. The lividity of the umbilicus has disappeared, but the umbilical wound is still suppurating.

February 2. Discharge of the affected knee less; baby is restless, does not sleep; left knee is now painful, but no swelling or fluctuation. Rectal temperature 101°; bowels correct and normal; general appearance good.

15th. The above temporary improvement has given way to a decided change for worse; marked pallor and weakness present. There is a swelling alongside of the left knee, also one in front over the femoral artery. Exploration alongside of knee with needle withdrew serum; this, bacterioscopically, contained nothing. The hip-joint opened by an incision, in front over the most prominent part of the femoral swelling; pus evacuated. The joint found involved. Temperature 100°-100½°, pulse 150 at times.

21st. Infant pale and much weaker; fluctuation and swelling underneath the left mammary gland opened, and found to contain pus. It was established at subsequent examinations that this pus had burrowed along the muscular planes from a mediastinal abscess resulting from a suppuration of a costo-sternal articulation. The probe touched exposed bone at one point. This mediastinal abscess at times simulated effusion in the pericardial region when accumulation occurred; this disappeared with discharge of pus.

March 21. Infant has steadily lost ground. Knee, hip, and mediastinal suppurations progressing. Temperature low, ranging from 100°-100½°; pulse 120-150. Knee on 22d opened freely; heads of bones found disorganized and necrotic. Hip opened with incision for resection; head and neck of femur entirely destroyed; great trochanter found in a necrotic state. Trochanter removed and drains inserted. Abscess of chest opened, and it was found that a sinus led from the mammary region to the mediastinal aspect of the sixth costo-sternal articulation. Sudden death two days subsequently. At no time could disease of the lungs, heart, or other organs be established. Urine contained no casts or albumin.

CASE II. *Scarlet fever; streptococcus invasion; streptococcus osteomyelitis manifested by multiple joint suppurations.*—Female, aged two years; Russian parentage.

January 27, 1891. Two weeks ago child brought to the dispensary with scarlet fever; returns to-day. Mother says that she noticed the child had swellings in the joints; no other history; people very ignorant and can give no connected data.

Status: Child pale; surface of the skin puffy, whitish; there is active desquamation; lips fissured; temperature 101°. The left hand is much swollen from the wrist down over the dorsal surface of the hand. Skin

bluish and œdematous. Swelling includes the wrist down to the metatarso-phalangeal joints. The ring finger of the right hand also swollen at the first phalangeal joint; skin here much thinned, red, and at most prominent point yellowish. Needle introduced into wrist and other joints; a thick, white, creamy pus withdrawn. Heads of the bones found bare and necrotic, grating against the probe and each other. Incision and drainage.

31st. Temperature 102°. Moderate amount of discharge from the joints; no other joints involved; complete disorganization of wrist- and finger-joints; bones forming joints grate against each other when moved.

February 2. Right elbow opened; pus discharged; left elbow swollen, but on account of bad general condition of patient the joint was not opened.

5th. Right elbow discharging; the radial and ulnar joint involved. There is now general anasarca and fever. Joints again examined and complete disorganization found in the joints of the ring finger of the right hand. Broncho-pneumonia, which was established January 31st, has progressed, involving lower lobe of the left lung. Urine contains no casts, but large numbers of leucocytes and albumin.

9th. Left elbow opened and pus evacuated; temperature 103°; pulse rapid and feeble; urine as above; general anasarca.

10th. Death. No autopsy.

CASE III.—Female infant, aged ten months; Russian.

May 7, 1891. Patient became ill four weeks ago with fever and slight cough; the parents say that there was flushing of the face at this time, but there is no distinct history of a rash. Later, the baby brought to me; broncho-pneumonia found. A few days ago, the mother noticed swelling of the wrist and elbow. The cough and dyspnœa increased.

Status: Infant pale, emaciated, and suffering dyspnœa. Examination of the chest shows a broncho-pneumonia on the right side of the chest, middle and lower regions of the lung. The right wrist is swollen, red and painful, and fluctuating. Wrist aspirated, and a yellowish-green pus removed. Incision; drainage; temperature 103°; pulse 145; respirations as above.

9th. Temperature 104°; pulse 160; dyspnœa. No fluid in the chest (at least as shown by needle). Discharge from the wrist is sero-purulent. Joints probably disorganized. There is œdema of the hand, and the elbow is swollen and red. No fluid in the joints.

13th. Temperature 102° to 104°; pulse 168. Baby is pale, prostrated; respirations 48. Evident dyspnœa. Needle introduced into chest and a serous fluid withdrawn from right side. Joints as follows: The wrist-joint is not only mobile and completely disorganized, but the epiphysis of the radius seems to be separated. The elbow shows increased mobility of the bones, and probable separation of the radial epiphysis. Discharge from the joints slight but continuous. Elbow-joint suppurating. The shoulder-joint on the same side a little swollen.

June 1. The patient having recovered from the broncho-pneumonia, and the effusion in the chest having disappeared, it was deemed safe and advisable to perform an operation for the evident osteomyelitis of the radius. The wrist- and elbow-joint opened; the radius found lying in a groove of tissues denuded of periosteum. The radius removed entire. No trace of periosteum evident; nothing but a granulating groove found in which the bone lay. The patient made an excellent recovery. The affected forearm, when healed, was held by the patient in a state of pronation.

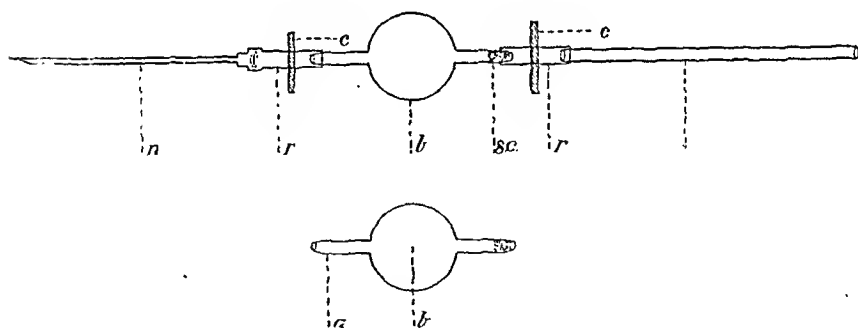
CASE IV.—(a) Male infant, five weeks old; born in United States, Russian parents.

June 5, 1891. Mother says the infant was born at the end of seventh month (?), and that delivery was attended with difficulties. She was quite ill after delivery, but made a good recovery. The umbilicus of the infant was much inflamed in the first week after delivery, and the mother noticed swelling of the left elbow; it was also painful; the swelling grew worse, followed by swelling of the hips. Within the past few days the left temporomaxillary articulation became swollen. The infant cries when moved.

Status: An atrophic, pale infant, weighing about three pounds; slight fever— 101° ; pulse too feeble and rapid at wrist to count accurately. Most marked swelling is that of the left elbow; the joint bones very movable, showing complete disorganization of joints. Skin over elbow thinned and livid, and in one place yellowish (pus). Large fluctuating swelling over the left hip. Needle introduced withdraws pus and strikes bare bone. The right hip shows a fluctuating swelling, as also the left temporo-maxillary articulation. The umbilicus is not red or inflamed, but a drop of pus can be squeezed from it.

The investigation of the above cases was confined to a bacteriological examination of the pus in the affected joints, the isolation of pure cultures, their injection into animals—rabbits, mice—and a study of the results thus obtained. The pus was withdrawn from the joints after carefully cleansing the outer skin by means of a large hypodermatic needle, which was attached to a bulb of glass from which the air had been previously exhausted. All parts of this apparatus, a description of which will be found in an appended note,¹ had been carefully steril-

¹ *Description of an aspirating bulb used to obtain pus and fluid in the above work.*—The apparatus used for obtaining purely sterile specimens of pus from the joints of the cases in this paper consists of a glass bulb (*b*), which has two prolonged tube ends. Both of these are stuffed with cotton, and the whole is sterilized in the dry oven. When ready to use, one end is cleared of cotton (*a*), and both ends are fitted with small pieces of rubber tubing (*r*). Each rubber tube is sterilized in steam previously. In its centre is placed a small clamp (*c*); a large-sized hypodermatic needle is attached at one end (*n*), and a piece of glass tubing is attached at the other end. The clamp at the



proximal extremity is opened, that at the needle end being closed, and the air is thoroughly exhausted from the glass bulb by means of the mouth. The proximal end of the tube in the bulb being occluded with cotton, no moisture from the mouth reaches the bulb. When the air is exhausted from the bulb the proximal clamp is closed. The needle is now entered into the joint, and when we are satisfied that it is in the cavity of the joint, the distal or needle clamp is opened and pus or fluid will flow into the bulb. If the pus is thick it may be aided to flow through the needle by suction. Nothing can reach the mouth or the bulb through the mouth, being prevented by the cotton (*sc*). The needle end may now be clamped when the specimen is obtained, and the bulb is closed by clamps at both ends, and may be transported or kept for future examination. A new bulb and rubber tubing is used each time, the cost being slight. The needle is cleansed and sterilized with dry heat.

ized—the needle and glass with dry heat and the rubber tubing with steam. No possible contamination of pus withdrawn from the joints could occur in this apparatus. The pus was examined in its crude state on cover-glasses, then sown upon obliquely solidified glycerin-agar, glucose-agar, or simple agar. Plates were also prepared of the above media, also peptone-gelatin, for the isolation of pure cultures. The pure cultures were again transferred to tubes of the various agars and gelatin or bouillon, and studied. All minutiae of the Koch methods were closely adhered to and will not be further repeated here. The animal experiments at first consisted in a few subcutaneous bouillon injections in the rabbit. Subsequent to these, all injections were made directly into the circulation, through the bloodvessels in the ear of the animal. Mice were injected at the root of the tail. After death, cultures of the animal's blood were made, and studies of pus in the joints carried out on the same lines as had been done in the case of the pus obtained from the patient's joint. Tissues of the experimental animal were stained and studied by picro-carmin, gentian-violet, ammonia carmin. The bones were also examined, softened by picric acid. In the animal experiments a bouillon culture was used, and in conveying the disease from animal to animal the spleen pulp was rubbed up with sterile bouillon and this solution injected into the circulation of the animal.

The microorganism found in all of the above cases, without any variation, was a streptococcus. This streptococcus was invariably in a pure state in the pus withdrawn, sometimes from two or three joints of the same case. There was no contamination or presence of a second microorganism, and in all the cases this streptococcus seemed to be the same microorganism. It acted the same in both artificial culture and animal experiment. Three of the four cases were proved to act similarly in the animal experiments. In the fourth case the pus was simply artificially cultivated. The presence of a staphylococcus was looked for, but was absent in every case.

If the pus obtained from any and all of the joints was spread upon cover-glass and stained with gentian-violet, it was seen to contain cocci exclusively in chains of shorter or longer extent. The chains were slung in knots; they were partially deprived of stain by the Gram method. When compared to the chain cocci obtained by the same procedure from the pus of empyema, there was no gross difference of appearance. The empyemas were broncho-pneumonic and septic, as in cases published by the author. The simple stains, as above, of the pure culture showed very little or no gross variation from streptococci obtained from the sources above mentioned. The presence of more delicately formed chains of streptococci of smaller diameter in empyema pus did not give any support to the opinion that there was any specious difference between the two sets of microorganisms. For in some of the pure cultures of

streptococci obtained from the joints in the above cases, some chains of streptococci could be found in which the diameters of the individual cocci were smaller than others. The chains obtained from the joint pus in pure bouillon cultures were sometimes very extensive; the cocci composing them at times were seen flattened transversely against each other, or there was a bright line (remining one of the divisions mentioned by Löffler) running the whole extent through the centre of the chain; there were also lines seeming to divide the cocci transversely. These appearances are seen in the larger cocci. In other chains these appearances were not found. I compared the above microorganism with others obtained from another source, as the empyema streptococcus, and could establish the above appearances here also. The leucocytes in the specimens of crude pus, spread and stained upon cover-glasses, seemed at times to enclose the streptococci in pairs or small chains of two or four sets of pairs or more. This appearance in the crude pus of the joints was also found in the pus withdrawn from the chest in empyemas. The streptococci arranged in pairs are interesting, showing that the simple presence of cocci arranged thus in joint pus may be mistaken for microorganisms which are met in diplococcus form. This has been referred to by many authors and also by myself, in a previous article upon "Joint Complications in Cases of Gonorrhœal Vulvo-vaginitis of Children." Culture methods will guard against errors. Though the simple clinical history of the above acute cases excluded the possibility of tuberculosis, still, for the sake of completeness, the crude pus was stained for the bacillus, with negative result.

If the pus was sown in peptone-gelatin in plates, there appeared generally on the fourth day small colonies, which had a slight opalescent look against a black background. Microscopically, by transmitted light, these colonies had a very light straw-color and finely granular appearance. They grew darker as they grew older. The gelatin was not fluidified, and the colonies were found deep, near the surface, or upon the surface. In agar, with or without glucose or glycerin, the colonies presented much the same appearances; they were microscopic at first, becoming larger in a few days; straw-colored at first, then darker. In platinum-needle cultures in gelatin, there appeared after four or five days a very delicate growth along the course of the puncture; this had a delicate white appearance against a dark ground. It was made up of fine bead-like colonies. The growth rarely grew to any marked thickness and generally stopped at a certain point. There was not any tendency to spread at the surface, except immediately around the puncture opening. There was never fluidification. The transfer of colonies from gelatin or agar to bouillon, and maintaining the bouillon at a temperature of $37\frac{1}{2}^{\circ}$ to 39° , caused the medium to become generally turbid over night, then there was a deposit at the bottom of the tube of flocculi; the

bouillon became gradually clear, and left along the sides of the test-tube a finely granular appearance, which became more dense toward the bottom of the tube, where the deposit existed. The centre of the bouillon was finally clear. There was no variation in the above in any of the specimens obtained from the pus of any of the joints. The pus was really in its first state a pure culture of these streptococci. If a platinum loop of the pus was drawn over the surface of an obliquely solidified agar (glucose, or glycerin, or simple agar) over night, there appeared in the thermostat a finely granular coating—moist, scarcely perceptible, in minute beads—on the surface. This became more pronounced after a few days, of a faint, whitish hue against a black background. The growth advanced to a certain extent, then ceased to extend. The transfer to plates showed a simple uniform growth—that described above—the streptococcus. I made a few potato cultures; after seven days a small pellicle could be distinguished with the lens, of the color of the potato. It presented nothing characteristic. From the above it will be seen that this streptococcus did not present any characteristics which, upon artificial media, could be said to be peculiar to it alone, or distinguish it from streptococci obtained from other sources, as phlegmon or empyema. Tubes of sterilized milk stained with litmus were also inoculated with this streptococcus. The milk became coagulated; the coagulum was characterized by the presence of spaces in which bubbles of gas appeared; the litmus was changed to a pinkish or reddish hue.

REVIEWS.

HUMAN MONSTROSITIES. By BARTON C. HIRST, M.D., Professor of Obstetrics, and GEORGE A. PIERSOL, M.D., Professor of Anatomy and Embryology in the University of Pennsylvania. Part I. Folio, pp: 88; seven photo-engraved plates and eighteen woodcuts in the text. Philadelphia: Lea Brothers & Co., 1891.

TERATOLOGY is a department of pathological anatomy, or, more strictly speaking, of abnormal embryology, which has hitherto received less attention in this country than its real importance justly entitles it to. There have been very few American investigators, students, or writers on the subject up to the present time. Indeed, no systematic treatise on teratology exists in the English language. In fact, the entire American literature of the subject, embracing every pamphlet, essay, and journal article that in any direct way relates to it, can readily be held between the thumb and fingers of the right hand.

The French, Germans, Italians, and several other nationalities have bestowed a great deal of attention on the embryology, classification, and anatomical description of human and animal monstrosities, and their languages are quite rich in valuable literature on the subject.

The reviewer of the work under consideration has long been impressed with the necessity of a concise and comprehensive handbook of teratology, which should teach the elements of the science, including the embryogenesis of all forms of abnormal development, the classification, nomenclature, and description of typical cases, illustrated with figures representing the external configuration and internal structure of representative cases, both human and comparative. In an ideal treatise of this character, ample if not exhaustive references to the literature of the subject should constitute a cardinal feature. In order to do this without needless repetition it would require a complete alphabetical and numbered list of authors on the subject, which could be conveniently referred to in the text by the numbers, thus bringing the whole materials of teratology to the practical knowledge of the student.

A work such as we have indicated would also require a glossary of all the numerous terms that have been employed by teratological writers, past and present, including the etymology, synonymy, definition, and, as far as possible, the authorship of every term that strictly pertains to teratology. This scheme may be regarded as impracticable on account of the enormous amount of labor involved; this, however, is not as great as at first sight might appear.

The reviewer is not aware that all of this work has ever been done and published in any single treatise, in any language; and so far as a glossary is concerned, that it has ever been attempted by any author.

At the present time the task would be rendered comparatively easy by compiling the terms from our exhaustive dictionaries, and the literature from general and special lists to be found in existing treatises on the subject; and, particularly, from that stupendous and magnificent monument of industry, the *Index-Catalogue* of the Library of the Surgeon-General's Office, U. S. Army. In volume ix., pp. 387-424, under the heading "Monsters," will be found seventy-four columns of titles of works, essays, and journal articles, which could be readily put in one alphabetical list, and numbered for reference. As this inestimable work will never be in the possession of but a very few persons, it is obvious that the "monster" references should be appended to a systematic treatise on teratology.

After these preliminary remarks, we will direct attention to the first fasciculus of the joint work of Professors Hirst and Piersol, of the Medical Department of the University of Pennsylvania, on *Human Monstrosities*. This part consists of eighty-eight folio pages of text, including eighteen woodcuts and seven photographic process plates. The publishers inform us that when all the four parts are completed the work will consist of about one hundred and fifty pages, and forty-nine plates from nature. The part now issued is indeed sumptuous. Folio in size, large brilliant type, heavy splendid paper of magnitude to afford grand margins, superb plates, the figures having the effect of relief on jet-black backgrounds, are all in harmony, and unite in giving a charm to the first pretentious work on teratology in the English language. It would be impossible to bestow too much praise on the publishers for their skill and liberality in the manufacture of this magnificent book. It is our duty to examine somewhat critically the text of the treatise in order to give a judicial opinion of its intrinsic merits, and to show how far it falls short and how nearly it meets the requirements of the ordinary student who is in search of knowledge concerning this branch of science, be he an anatomist, physiologist, or obstetrician. There are two positions from which to view this work. First, to compare it with other systematic works on teratology which had an existence previous to the advent of this, and, secondly, to consider its own individual merits. We desire to deal fairly with the authors of the work under review. Unlike most reviewers, we have read every word of the text—no very lengthy task, however, since the pages do not contain more words than those of ordinary octavo size. The essay by Prof. Piersol on the production of malformations is an admirable epitome of the latest and best information that exists on the subject, and cannot be excelled either in style or quality within a limited space of less than fifty pages. Prof. Hirst has made very short work of his department, which consists of brief definitions of some of the simpler forms of malformations, and descriptions of a few illustrative cases. The seven large plates, each representing a single foetus, are intended to cover congenital umbilical hernia, spina bifida, encephalocele, and deficient development of the extremities.

We are told that the original intention of the authors was to publish a series of plates representing the monstrosities contained in the Museum of the Medical Department of the University of Pennsylvania, with brief descriptions of the same. The work grew upon the authors to such an extent that they resolved to make the publication a systematic treatise on teratology.

Our profession ought to be very much pleased to possess this beautiful work, wherein they will find the rudiments of teratology, illustrated by admirable plates, of American specimens, of the principal and most striking forms of human monstrosities. The authors deserve all the credit that they modestly claim, viz.: that "the work should in a measure fill a gap in English literature, and familiarize the public with the treasures of an American collection." We regret that they have restricted themselves to the treasures of a single American collection, since there are to be found in the pathological museums in New York City, and in Boston, particularly that belonging to the Harvard Medical College, rare teratological "treasures" of almost every known variety. The great sheets of this work can be readily made each to contain from two to four figures without damaging the artistic effect, while it would greatly increase the interest and enhance the value of the atlas.

It is to be hoped that this work may awaken so much interest in the subject that some competent author will prepare a systematic treatise on the elements of human and comparative teratology, illustrated by well-executed woodcuts representing the external configuration and internal structure of all forms of monstrosities, also an exhaustive glossary of the terms relating to the science, and a complete bibliography of the subject. Such a work would require an octavo of from five to eight hundred pages.

It is impossible to treat the subject properly in less space than we have indicated. The work of Vrolik is in two quarto volumes, one of which consists of an atlas of one hundred lithographic plates of several figures each. Ahlfeld's work contains three hundred pages of octavo text, and an atlas of forty-nine large folio plates embracing an aggregate of seven hundred and sixty-six figures. The work of Cesare Taruffi, of Bologna, *Storia della Teratologia*, still in course of publication, has reached its fifth tomo, the five volumes containing 2661 pages. These are a few of the works, which are mentioned to give the reader an idea of the magnitude of the science of teratology. The literature of the subject is vast. The reviewer glories in the possession of more than four hundred treatises, large and small, general and special, on the subject under consideration. We shall wait impatiently for the appearance of the succeeding parts of the superb atlas of *Human Monstrosities* by Hirst and Piersol, and in the meantime take pleasure in recommending the work to the general practitioner, to the obstetrician, and to students of physiology, embryology, and other branches of biology.

G. J. F.

LECTURES ON OTORRHOEA AND ITS COMPLICATIONS. Delivered at the London Throat Hospital in connection with the London Post-Graduate Course. By W. R. H. STEWART, F.R.C.S., L.R.C.P.Ed., etc. Second edition. Pp. 80. London: John Ball & Sons, 1891.

IN this brochure the author desires to state a few facts relating to the symptoms, treatment, and sequelæ of otorrhœa, "hoping to draw the attention, more especially of the general practitioner, to the ruinous practice of allowing a discharge from the ear to continue untreated, and to show how easily a cure may be effected in the earlier stages, and so

perchance save not only the hearing-power and perhaps the lives of a number of patients, but also prevent them from going about with what, at times, is a most offensive discharge, and becoming a nuisance to themselves and all about them."

The description of disease and symptoms is clear and succinct, but the treatment is antiquated and many of the instruments are clumsy. No Eustachian catheter should have a bulbous end like the one in Fig. 14, p. 26, of this work. Aspiration by means of an instrument is not required after paracentesis of the membrane in acute otitis media; it is also very painful and provocative of further inflammation. Elasticity of the distended tissues will empty the drum-cavity fast enough after paracentesis.

In chronic suppuration the line of treatment marked out is antiseptic and aseptic, but beyond instillations and injections of antiseptics, which are not sufficient alone to induce a cure in most cases, nothing of value is suggested. It is amazing to see so much time spent on artificial membranes and the treatment of pyæmia and mastoid disease, usually fruitless, and not *one* word about improving drainage and freeing the conductors of necrotic tissue, by excision of the diseased remnants of the membrana tympani and ossicula, and thus preventing pyæmia, mastoid caries, and cerebral disease. The explanation may be found in this instance in the fact that the author is more of a rhinologist and laryngologist than an aurist; but students should be taught all they will require and what many of them are now demanding, though their would-be teachers in some instances fail to give it. But the advance of science is inexorable and teachers should be better prepared than some of them seem to be, to teach their pupils all they ought to know about modern otology.

This little brochure might have been written, in fact it sounds as though it had been written, a generation or two ago; but it is no worse nor better than many books on otology published to-day but written for the past, and in which either the truth is suppressed or the author does not know what is being done in otology. In either case the task of the author is not done perfectly and the book has little value.

C. H. B.

THE RATIONAL CURE OF DEAFNESS AND DISCHARGE FROM THE EAR.

By SAMUEL SEXTON, M.D., assisted by ALEXANDER DUANE, M.D. 8vo, 90 pp. New York: J. W. Vail & Co., 1891.

IN turning to this brochure, we find, as it were, a supplement to the deficiencies of the one just reviewed, for in Dr. Sexton's monograph is set forth "the modern treatment for the radical cure of deafness, otorrhœa, noises in the head, vertigo, and distress in the ear." There is found in Chapter I., "History of the former operations upon the ear and the reason for their failure;" Chapter II., "The modern operation—what it is;" Chapter III., "Necessity for the operation;" and in Chapter IV., "The operation in chronic catarrh of the middle ear." This chapter contains the notes of many cases and the results of the operation. Chapter V., "The operation in chronic discharge from the middle

ear." This also contains notes of many interesting and successful cases. Chapter VI., "Immediate and remote effects of the operation."

Referring again to Chapter II., we learn that the patient is first completely anesthetized, so as not only to be entirely free from pain, but also to remain perfectly still during the operation. Then the field of the operation is brilliantly illuminated by a lantern, containing an incandescent electric light, attached by a head-band to the surgeon's forehead. The separate steps of the operation are not numerous, but they require knowledge of the anatomy, and skill. The first thing to be done is to get the drum-membrane out of the way. "This is effected by making a circular sweep with a delicate knife, specially devised for the purpose, which separates the membrane from its attachments all around. Then the incus is disjoined from the stapes, and removed or not, according to the indications of the case. The third step consists in the removal of the malleus, when, except for the careful cleansing and dressing of the parts, the operation is complete."

In considering the necessity of the operation (Chapter III.), the author says, that "the unanimous testimony of all competent aurists is, that a procedure which shall enable the surgeon to arrest the otherwise inexorable progress of the chronic suppurative and chronic adhesive processes of the middle ear is one of the greatest desiderata." A similar necessity exists for some means more satisfactory than that at present in use, in cases of so-called chronic catarrh of the middle ear, also denominated by various other names, such as "dry, sclerotic, hyperplastic, proliferous, or adhesive inflammation or catarrh of the middle ear." Here the chain of bones becomes rigid, and finally more or less ankylosed: the Eustachian tube may become more or less occluded or unduly patulous; and in many cases newly formed bands of fibrous tissue stretch across the drum-cavity, binding the tympanic structures together, thus rendering them more rigid than before. These changes are followed by progressive deafness in all cases and by tinnitus aurium and vertigo in many. These are the cases that go the rounds of aurists' offices, enduring syringings, inflation of the tympana, injections into the Eustachian tubes, treatment of the nares, naso-pharynx, and throat, sometimes with slight benefit, oftener with none. "Audacious as it may seem to stigmatize forms of treatment so universally adopted as both useless and harmful, the fact nevertheless remains, corroborated by the experience of all otologists, that no improvement does accrue from their continued employment. . . . In the operation of excision we do have an efficient remedy for this class of cases; the hearing is not only retained at its former height, but is frequently, nay, generally, permanently increased; the tinnitus and other disagreeable symptoms are relieved," and the patient not only kept from getting worse but made permanently better.

In chronic suppuration of the middle ear this operation not only checks the disease, but in doing so, prevents suppuration and caries of the mastoid and tegmen tympani, thus warding off phlebitis of the sinuses, pyæmia, and cerebral abscess, with their fatal results.

The operation as set forth in Dr. Sexton's brochure is a most valuable addition to aural surgery, and as such must now be permanently added to the equipment of the surgeon who desires to practise otology with success. Justice to his patient demands that he shall use this means of

cure in such important diseases, and therefore he dare not pass it by with ridicule or scorn.

The author deserves the thanks of both physician and patient for recording his labors and successes with this operation, and no aurist can afford to be without the work, or to neglect its teachings, if he wishes to be abreast of the times.

C. H. B.

LES PIERRES DU POUMON, DE LA PLÈVRE, ET DES BRONCHES, ET LA PSEUDO-PHTHISIE PULMONAIRE D'ORIGINE CALCULEUSE. Par le DR. S. A. MARIUS POULALION, Ancien Interne des Hôpitaux et de l'Hospice de la Salpêtrière. G. Steinheil, Éditeur. Paris, 1891.

CALCULI OF THE LUNG, PLEURA, AND BRONCHI, AND PSEUDO-PULMONARY PHTHISIS CAUSED BY CALCULI.

THIS work considers in a very comprehensive way the various forms of bony growths and calcareous deposits found in the air-passages, including the larynx, trachea, bronchi, lungs, pleura, bronchial glands, and pulmonary vessels. The subjects are treated from a pathological, clinical, and therapeutic standpoint. The author quotes histories of illustrative cases from medical literature, besides adding a few personal observations. The special consideration of many of these processes seems to be unnecessarily full, as the morbid processes considered do not form a series of lesions peculiar to the air-passages, but are the special manifestations in these tissues of some of the general pathological processes, and occur under the same conditions and in the same manner in other parts of the body, and they have no clinical significance or importance.

There are, however, some sections of the work which are of great interest, especially those dealing with the primary bony growths in the lungs, and pulmonary pseudo-phthisis of calculous origin ("pseudo-phthisie pulmonaire d'origine calculeuse").

The former of these deals with a subject that has had little or no attention in this country, and but little in Europe. The subject has no clinical importance, but it has great pathological interest. These bony growths occur as larger or smaller masses in the lung, or as branching spicula of bone, and the latter are sometimes scattered everywhere through the pulmonary tissue in large numbers. They do not seem to be related to the bloodvessels or the bronchi, but are found in the interstitial tissue of the lung. Some of the spicula are an inch and a half or two inches in length, and in some cases they constitute the only anatomical lesion, while in other cases they are associated with a chronic interstitial pneumonia. No satisfactory explanation of their occurrence has been advanced by the author, or by previous writers on this subject.

The consideration of "pseudo-phthisie pulmonaire d'origine calculeuse" is very full and valuable from both a clinical and pathological standpoint. This term is applied to an affection which is often characterized by the symptoms and physical signs of pulmonary tuberculosis, but which differs from the latter by the absence of tubercle bacilli in the sputum, and by the expectoration of bronchioliths, or bony or cal-

careous concretions derived from other parts of the air-passages than the bronchi. The affection is produced by inflammation and ulceration brought about by the direct action of a calculus on the pulmonary parenchyma. The calculus may have been formed in any part of the air-passages, but has finally found lodgment in the pulmonary parenchyma. A peculiar group of acute and alarming symptoms are often associated with the expulsion of concretions, and to this syndrome the author has applied the term *bronchiolithic crisis*—*crise broncholithique*.

The work evinces much careful study, and is a valuable contribution to a subject that has received but little consideration. H. M. B.

NOTES ON THE EXAMINATION OF THE SPUTUM, VOMIT, FECES, URINE, AND BLOOD. By SIDNEY COUPLAND, M.D., F.R.C.P., Physician to the Middlesex Hospital, and Lecturer on Practical Medicine in the Medical School; Examiner in Medicine at the Examining Board for England. London: H. K. Lewis, 1891.

THE author states in the prefatory note to the first edition that the book is written for the use of the students attending his class, and the reader is referred for fuller details to larger works on these subjects. The first twenty-two pages of the pamphlet contain a description of the general characters and composition, with the microscopical examination, of the sputum, vomit, and feces. The appearance, quantity, and composition of the sputum in different disease conditions is pointed out, and the several methods given for the detection of elastic tissue and the staining of tubercle bacilli are clear and concise. Each step in the various latter processes, with time required and strength of reagents used, is definitely stated.

In the examination of the vomit, its quantity, character, reaction, and microscopical examination are considered, special stress being laid upon the significance of the excess or diminution of free HCl. The microscopical examination in this connection simply consists of a tabulated list of the various objects which may be found in the microscopic field, no details as to methods of preparation or differentiation being given the reader.

The examination of the feces is considered under the same general heads as the vomit and sputum. The author here considers at some length the leading characters, both macroscopic and microscopic, of the chief varieties of intestinal parasites. In the twenty-five pages devoted to the examination of the urine the author gives in a condensed form the general and physical characters of the chief sedimentary deposits as well as the quantitative and qualitative analysis. The last seven pages are given to the specific gravity, estimation of hæmoglobin and microscopical examination of the blood, in so far as is necessary for ordinary clinical purposes.

Brevity is the chief characteristic of the work—in fact, it supplies to the student the same kind of information as one finds in the ordinary quiz compend. Dr. Coupland has in his small manual given to medical students a very condensed but quite clear idea of the *modus operandi* of

examining the subjects considered, and as a knowledge of this portion of medicine is essential, the book is one which is certainly worthy of a place in every undergraduate's library.

As an aid to the memory and a rapid reference-book to the student, the work is of value, the only criticism that is justifiable being that its brevity is such that facts only can be stated; causes and inferences must be supplied by the reader.

E. E. G.

MINOR SURGERY AND BANDAGING: INCLUDING THE TREATMENT OF FRACTURES AND DISLOCATIONS, TRACHEOTOMY, INTUBATION OF THE LARYNX, LIGATURES OF ARTERIES, AND AMPUTATIONS. By HENRY R. WHARTON, M.D., Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, the Children's Hospital, and the Drexel Hospital for Children; Consulting Surgeon to the Rush Hospital for Diseases of the Chest, etc. 12mo, pp. vi., 497. Philadelphia: Lea Brothers & Co., 1891.

As indicated by its title, this is far more than a mere book on bandaging and the surgical procedures ordinarily included in works on minor surgery. It treats as well of some of the graver matters of our science. But when we bear in mind the extended experience of its author, a fact sufficiently testified to by the number and responsibility of the public appointments held by him, it becomes at once apparent that this extension of sphere must add largely to the value of the book. Then, this extension, which constitutes a large part of the volume, is appropriate in a work sure to fall into the hands of students and young practitioners, as the matters treated are those which the youngest surgeon may be called upon to deal with, and which very often do not admit of the deliberation and choice of operator permissible in so large a proportion of surgical proceedings. Another, and amply sufficient, justification for the enlarged scope Dr. Wharton has seen fit to adopt, will be found in the way in which he has done his work. Such clear, forcible, and practical directions as he gives are not likely to be criticised wherever they may be found.

Yet while cordially approving the enlarged sphere of the book, we must demur at that classification, however approved by usage, which makes tracheotomy merely an item of minor surgery. It is usual to speak of tracheotomy as an operation which every recent graduate should be ready to do, without warning, and with facility. All of which is very true. Yet we venture the opinion that the medical student, or hospital resident, who has opened the trachea in a short-necked child, will grow to old age ere he finds himself called upon to discharge a more perplexing duty, or one requiring more nerve for its performance. Short of an amputation at the hip-joint or the ligation of some large vessel, none of the operations described by Dr. Wharton will be found more difficult or involving greater anxiety on the part of the operator.

It will be understood that it is only with the location of tracheotomy, and not Dr. Wharton's description of it, with which we are dissatisfied.

As there is no one better qualified by large experience to speak of tracheotomy, so no more satisfactory account of the details of the operation can be given than the one contained in this volume.

With this criticism of classification, in which our author merely follows the usual course, we have nothing more of an adverse character to say.

The illustrations are numerous and good. An especial feature is the reproduction of many of them from photographs. The result is less diagrammatic, but much more realistic and faithful representations of bandages as they are seen, though they do not make the turns more perceptible to the eye, and they, therefore, seem to have few advantages for mere purposes of demonstration.

The book is well printed, is substantially bound in cloth with hot-pressed back and corners—which look much like leather—and we have no hesitation in saying that the purchaser of Dr. Wharton's work may rest satisfied that he has one which is the equal of any within the limits laid down by its author. It bears many tokens of faithful and honest labor in its preparation, and while properly conservative in spirit is fully abreast of the times in the great advances made of late years.

S. A.

PTOMAINES, LEUCOMAINES, AND BACTERIAL PROTEIDS; OR, THE CHEMICAL FACTORS IN THE CAUSATION OF DISEASE. By VICTOR C. VAUGHAN, PH.D., M.D., etc., and FREDERICK E. NOVY, SC.D., M.D. Second edition, revised and enlarged. Philadelphia: Lea Brothers & Co., 1891.

THE fact that a second edition of a purely scientific work like this appears within three years of its first appearance, is sufficient proof that it has been received by the profession with more than common interest. This may largely be accounted for by the systematic arrangement and the practical manner which the authors successfully adopted for it. Although the subject-matter may be said to be quite recent in its origin, it is scattered throughout scientific literature in such a way as to make a collation and compilation in a readable manner, adapted to the medical profession, a difficult task. This the authors accomplished in the first edition, now adding to it furthermore all that science has since then developed in this direction. The authors' prediction that bacterial products rather than bacteria themselves would be found causative of disease, has by this time been probably generally accepted. Though the recent failures in certain directions by protective inoculation with bacterial products have upset or rather shaken the belief in their efficacy as practical therapeutic agents, their powerful action on animal and man must be held up as an argument as to their power for harm, if not for good.

This book is one that is of the greatest importance, and the modern physician who accepts bacterial pathology cannot have a complete knowledge of this subject unless he has carefully perused it. To the toxicologist the subject is alike of great import, as well as to the hygienist and sanitarian.

It contains information which is not easily obtained elsewhere, and which is of a kind that no medical thinker should be without.

L. W.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF
REYNOLD W. WILCOX, M.A., M.D.,
PROFESSOR OF CLINICAL MEDICINE IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND
HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

METACETIN.

PROFESSOR MASIVS, in the *Bulletin de l'Académie Royale de Médecine de Belgique*, tome v., No. 10, p. 715, reports the use of this remedy in eight cases of typhoid fever, fifteen of articular rheumatism, and several of pulmonary tuberculosis presenting a hectic fever of an irregular type. This remedy, introduced by Fr. Mahnert, is a derivative of amido-phenol. He concludes that it is a powerful antipyretic; in dose of three and one-half grains, repeated in an hour, it lowers elevated temperature through several degrees. This lowering is gradual, the maximum being reached in two or three hours, and is maintained one hour. Its antipyretic action is apparent in the first half-hour, and persists three or four hours, followed by an elevation to the original point. With the exception of abundant perspiration, there are no secondary or dangerous symptoms, as vertigo, headache, distress, digestive disturbance, eruption, chilly sensations, cyanosis, or collapse. It acts not only as an antipyretic but also favorably and rapidly in articular rheumatism, although in this respect it is inferior to salicylate of soda. It compares favorably with antipyrine and with phenacetin, which it resembles, and is superior to anti-febrin and kairin, in that it does not possess poisonous properties.

DEATH DURING CHLOROFORM ANÆSTHESIA.

DR. T. LAUDER BRUNTON gave a short description of the results of the Hyderabad Chloroform Commission at the last annual meeting of the British Medical Association (*The British Medical Journal*, 1891, No. 1612, p. 1088). The questions were, how far death was due to the action of the anæsthetic (a) upon the heart, (b) upon the respiration, or (c) upon both, and to the effect of shock from the operation. It is pretty well established that chloro-

form is a universal protoplasmic poison, and will destroy the contractile power of individual cells, of cilia, and of muscular fibres; but it is contended that when administered by inhalation it acts more readily upon the respiration than it does upon the heart, and from the respiration failing first, a sufficient quantity to paralyze the heart is never conveyed to it, and that therefore death is respiratory death, beginning with the respiration, and not with the heart. Reviewing the work of the first and second Commission, and that of the Glasgow Committee, it may be said that the great risk of death lies in the occurrence of asphyxia during administration. In comparing its action with that of ether, it was found that the latter was a less powerful anæsthetic, and that although neither will paralyze the heart when giving plenty of air, the heart will beat longer during asphyxia with ether than with chloroform. In attempting to determine the effect of shock as a cause of death, the writer defines "syncope" as a temporary stoppage of the heart's action, and which may be rapidly recovered from, and "shock" as due to paralysis of the abdominal vessels, which is a grave and persistent condition. Efforts to produce syncope by raising the head, by attempting to stimulate the vagus reflexly, or even by direct irritation, seemed to show that stoppage of the heart's action through the vagus was not a dangerous condition. Attempts to produce shock by a blow upon the intestine, or by such an operation as evulsion of the toe-nail, were unsuccessful.

SULPHONAL AS A SEDATIVE AND HYPNOTIC.

DR. T. CARLYLE JOHNSTONE, in the *Journal of Mental Science*, 1892, No. 124, p. 55, gives an analysis of fifty cases of mental disorder in which this drug was used. He arranges his results in three divisions: 1. The effects produced by single doses, or doses separated by long intervals. 2. Those produced by doses repeated at intervals of forty-eight hours. 3. Those produced by doses repeated at intervals of twenty-four hours or more frequently. His practice, as the result of the experiments described in this paper, is to begin with single doses administered in the evening, and, when necessary, to repeat them at intervals of forty-eight hours. If this is found insufficient to produce sleep and quiet, the interval is next reduced to twenty-four hours. In this way a satisfactory hypnotic effect has always been obtained; but when the excitement is intractable, and the drug is employed primarily for its sedative action, it is not infrequently found necessary to further reduce the intervals by giving it twice a day, namely, in the morning and evening; greater frequency has not been found to have any distinct advantage. He concludes that, in *properly regulated doses*, it is an efficient hypnotic, and, compared with other hypnotics, its action is fairly certain and constant. The sleep produced by it is natural and tranquil and undisturbed by dreams. It has no injurious effect upon the circulation, respiration, appetite, digestion, or temperature, or on the general health. After a time it may be discontinued or the dose reduced, the patient continuing to sleep well. It has a distinct sedative action in mental excitement or distress, and may be employed with great benefit in cases of insanity, especially in such as are of a recent or acute character. Its chief disadvantages are the slowness of its action and the tendency of the action to be prolonged into the succeed-

ing day, and to be followed by drowsiness, confusion, giddiness, or fatigue, and the serious cerebral and motor symptoms which are apt to follow repeated doses.

THE POISONOUS ACTION OF SULPHONAL.

DR. CAMILLO FÜRST has a timely paper on this subject in the *International klinische Rundschau*, 1891—No. 48, S. 1876; No. 49, S. 1919. He notes such symptoms as twitching of the muscles, nausea, vomiting, vertigo, fainting attacks, tinnitus, chilly sensations, paralytic weakness, ataxia, diminished pupillary action, diarrhoea (rarely), obstipation, ischuria or complete anuria, lowered temperature, cardiac weakness, impairment of respiration, cutaneous eruptions, hallucinations, and amaurosis. In spite of all these symptoms, with greater or less reason attributed to sulphonal, in single doses it is devoid of danger, and in daily use for long periods of time it is harmless, but the moment that symptoms of kidney derangement arise, or there is diminished peristalsis, repeated doses or even its daily usage is absolutely contra-indicated.

THE TREATMENT OF IMPOTENCE IN MEN.

DR. VICTOR V. GYURKOVECKY, in the *Wiener medicinische Presse*, 1891, presents two papers (No. 46, S. 1738; No. 47, S. 1780). He reports complete cure by suspension in Sayre's apparatus in three cases of sexual neurasthenia. In cases where this condition is the result of gonorrhoea, he anoints his catheter or endoscope with balsam of copaiba to get its effect upon the mucous membranes, makes a thorough examination and cures the local condition. He has treated with benefit one case, and to no effect one case of masturbation (a most frequent cause of impotence), by hypnotic suggestion. In sexual neurasthenia he has treated two cases by hypnotic suggestion, one to a cure and the other with benefit, although he is yet under treatment. From these cases he concludes that hypnotic suggestion is a powerful remedy for masturbation, pathological pollutions, and the various forms of impotence.

GUAIACOL CARBONATE IN TUBERCULOSIS.

DRS. RICHARD SEIFERT and FRITZ HÖLSCHER, in a very practical paper, add much to the knowledge of the creasote derivatives in the treatment of tuberculosis (*Berliner klinische Wochenschrift*, 1891, No. 51, S. 1195). Recognizing the fact that creasote, although of very great value in therapeutics, yet causes much digestive disturbance, varies much in the proportion of guaiacol which it contains, also that the so-called "absolutely pure" guaiacol contains, at best, only 90 per cent. of this agent, he uses guaiacol carbonate, which has the formula $\text{CO}(\text{OC}_6\text{H}_4\text{OCH}_3)_2$. Administered as guaiacol carbonate, no irritation results, and no free guaiacol can be found in the intestines, but in one-half to one hour after injection it can be detected in the urine. Commencing with a dose of one-third to one grain, the daily dose of ninety grains was gradually reached. Even in this dose there was not observed any disturbance of the digestive, circulatory, or nervous system. The symptoms of improvement are an increase of appetite, improvement of nutri-

tion, increase of body weight, and an increase of the power of resistance of the organism; the attacks of coughing were milder, expectoration easier—more mucous than purulent; the fever and night-sweats less noticeable; the patient more contented during the day and at night could sleep better; there was also an improvement in the physical signs. Four cases, to illustrate the result of this treatment, are reported. Two patients who had taken creasote, and one guaiacol, with little benefit, with this treatment were greatly improved. Some cases that had improved under guaiacol carbonate, lost weight and their good bodily condition when put upon creasote. This remedy must be continued for a long time after all active symptoms have disappeared, and in these cases all other means must be employed—regulated diet and a treatment for each individual patient.

GUAIACOL IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

DRS. A. WEILL and M. S. DIAMANTBERGER have practised intra-pulmonary injections of two per cent. of this remedy in oil of vaselin (*Journal de Médecine de Paris*, 1891, No. 49, p. 530). They have never noted any complication other than a slight cough, with or without some usual expectoration; once only there was a scanty bloody expectoration, which soon stopped of itself. In well-marked cavities these injections *in situ* are indicated, and our authors have not hesitated to make them with pure guaiacol or in a concentrated solution with sterilized oil. They have also used hypodermatic injections, according to the formulæ of Guttman and of Bouchard. For these injections a pure article must be used.

CANTHARIDINATE OF POTASH IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

DR. W. SOLTAU FENWICK and MR. ARTHUR WELSFORD have published the results from this remedy in sixteen cases (*The British Medical Journal*, 1891, No. 1617, p. 1349). After calling attention to the fact that in investigating the influence of a drug upon the progress of organic disease a wide distinction must be drawn between subjective and objective symptoms, they conclude:

1. The cantharidinate of potash is absolutely useless in producing any obvious beneficial effect in pulmonary tuberculosis.
2. That in doses exceeding $\frac{1}{320}$ of a grain it is apt to induce albuminuria, with pain in the loins, strangury, and even hæmaturia.
3. That for the latter it should in no case be used without the most careful supervision, and that it is therefore ill adapted for out-patient practice.

In respect to laryngeal tuberculosis in the two cases observed, no improvement in this condition was detected.

DR. E. VON RENNENKAMPFF records sixteen cases (*St. Petersburger med. Wochenschrift*, 1891, No. 25, S. 213) of the use of this remedy. The report is not favorable.

IS IMPURE CHLOROFORM DANGEROUS?

Under this title DR. RÉNÉ DUBOIS-REYMOND gives the results of a laboratory study, using in the experiments the cardiogram of Cowl and Gad

(*Berliner klinische Wochenschrift*, 1891, No. 53, S. 1225). The conclusions drawn from experiments in which the impurè residue after crystallization of absolutely chemically pure chloroform was used are (for dogs): Inhalation of the residue diminishes the time of the stoppage of the respiration, as compared with pure chloroform, in the average of 7 to 11; the blood pressure at the moment of the cessation of respiration is less after inhalation of the residue as compared with that after chloroform; on the contrary, the frequency of the heart-beat is greater. Believing that the amount of the impurities present is variable, he finds an explanation in the difference of the reports of the Glasgow Chloroform Committee (danger due to fall of blood pressure and paralysis of the heart) and the Hyderabad Commission (danger due to respiratory with secondary cardiac paralysis)—the latter being symptoms due to impure chloroform. The argument of the paper is for the use of absolutely chemically pure chloroform, since it is not a question of the degree of dilution of poisonous material in an indifferent substance, but in one that of itself calls for care in administration.

INJURY TO THE STOMACH FROM CATHETERIZATION.

In the *Münchener medicinische Wochenschrift*, 1891, No. 52, S. 903, DR. FRIEDRICH CRÄMER reports two cases of injury to the mucous membrane, from its being sucked into the eye of the instrument and a piece being forcibly detached. It is important to use only soft rubber instruments, siphons in place of pumps, and allow the fluid in the tube to escape backward into the stomach as it is gradually withdrawn.

TREATMENT OF CHLOROSIS.

DR. ALOIS PICK, in the *Wiener klinische Wochenschrift*, 1891, No. 50, S. 939, goes over this subject from the standpoint of auto-intoxication. Good results may be obtained by administration of hydrochloric acid, β -naphthol with salicylate of bismuth, stomach-washing if dilatation; while a drop of creasote taken with sugar of milk after meals has been followed by great benefit.

MECHANICAL TREATMENT OF CHLOROTIC AMENORRHEA.

HANS ADOLPHI gives full details of the successful treatment of a patient by means of pelvic massage (Thüre Brandt), particular attention being also paid to the alimentary canal, basing his theory upon the doctrine of fæcal anæmia, as propounded by Sir Andrew Clark.—*St. Petersburger medicinische Wochenschrift*, 1891, No. 31, S. 271.

SALOPHEN.

DR. PAUL GUTTMANN has been studying this drug in the Moabit Hospital at Berlin (*Berliner klinische Wochenschrift*, 1891, No. 52, S. 1209). The drug contains about equal parts of acetyl-paramidophenol, and salicylic acid, and is intended for the same purposes for which the acid is used; the dose being sixty to ninety grains per day. It reduces pain and swelling, but does not protect against relapse. It apparently does not markedly reduce the tem-

perature. In chronic rheumatism the results were not so favorable as in the acute. It is likely that other properties than as an anti-rheumatic may be found for it. In the dose given above no untoward symptoms have been observed.

JAMBUL IN DIABETES MELLITUS.

DR. H. HILDEBRANDT, in the *Berliner klinische Wochenschrift*, 1892, No. 1, S. 5, contributes a paper upon the method of action of this now well-known remedy. He believes that it is upon the vegetable diastase and also upon the sugar-forming ferments of the blood-serum, saliva, and pancreatic extract; an analogous influence upon trypsin and pepsin has not been determined. In diabetes, then, it is useful, because it diminishes the change of starch into sugar in the alimentary canal, and in the tissues the change into sugar of glycogen.

DR. GEORGE FOY, in the *Medical Press*, 1892, No. 2749, p. 29, goes over the botany and pharmacology of the drug. After a careful analysis of the literature he concludes that the record is very fluctuating—marked success attained for very unpromising-looking cases by some physicians, and with the most carefully selected cases and perfectly pure samples of the drug others have failed to get any benefit from it. That the drug has an influence on the conversion of starch into sugar is shown by the experiments of Lascelles Scott, T. A. E. Balfour, and G. Sims Woodhead.

A NEW STYPTIC.

DR. A. E. WRIGHT, in the *British Medical Journal*, 1891, vol. ii. p. 1306, presents the results of his laboratory experiments upon a new styptic, and upon the possibility of increasing the coagulability of the blood in the vessels in cases of hæmophilia and aneurism and internal hemorrhage. He believes that, as shed blood can be kept permanently liquid by converting the lime salts in the blood into insoluble oxalates by the addition of small quantities of any of the soluble salts of oxalic acid (Arthur and Pagès), so a fibrin-ferment, to which 1 per cent. of the bichloride of calcium is added, would act as a styptic. He obtains his fibrin-ferment from the blood of cattle or sheep, the former yielding more of the ferment. The blood is received from the vessels into three times its volume of water. It is then set aside until it commences to gelatinize, when it is stirred with a bundle of wires. The fibrin thus obtained is washed until it is practically free from blood corpuscles. The fibrin-ferment is extracted with five or ten volumes of water for twenty-four hours and filtered. To the filtrate is added the bichloride of calcium. He reports laboratory experiments confirmatory of his theory. Believing that the coagulability of the blood can be increased by injection—1, of this fibrin-ferment; 2, of Wooldridge's tissue fibrinogen; 3, of calcium salts; and after showing that both the first and second of these methods are inapplicable to intra-vascular coagulation, he reports his experiments with calcium salts.

Without noticing any intra-vascular coagulation as resulting from injection of calcium salts directly into the blood, nor, on the other hand, any

diminished liquidity, on the contrary he has in all cases observed a considerable increase of coagulability to follow its administration by the mouth or by the method of intra-venous injections. The practical application lies in the suggestion of administration of calcium chloride when it is desired to increase the coagulability of blood in man—internal hemorrhage (typhoid fever), *post-partum* hemorrhages from placenta prævia, and in hæmophilia. From experiments on dogs, having regard for local gastric congestion or general symptoms, the dose for man would be, approximately, four drachms to a pint of water. Calcium chloride is excreted very rapidly through the kidneys, so that the coagulability of the blood soon reverts to the normal.

THE TREATMENT OF SHOCK.

In the *Correspondenzblatt für Schweizer Aerzte*, 1891, No. 24, S. 745, DR. A. KOTTMANN gives the details of the transfusion of salt water in the left cephalic vein to the amount of twenty-four ounces with a transfusion syringe. In cases when anæsthesia during shock is necessary he recommends ether instead of chloroform for that purpose. In cases of collapse, especially in pyæmic conditions, he combines these two methods with success, operating under ether anæsthesia, and hoping, through the transfusion of salt water, to prevent shock, and as well to free the tissues from the poison. He cites successful cases in support of these methods of procedure.

THE TREATMENT OF SYPHILITIC SUBJECTS WHO ARE PREDISPOSED TO DISEASES OF THE NERVOUS SYSTEM.

In the *Gazette hebdomadaire de Médecine et Chirurgie*, 1891, No. 51, p. 606, appear the essential facts of a paper by DR. ALFRED FOURNIER, which was presented before the French Society of Dermatology and Syphilography. Taking up the question of the possibility of mercury being the cause of tabes in syphilitics, he disposes of this question by citing indisputable facts which show the impossibility that this can be the case, believing that those are predisposed to syphilis of the nervous system who suffer from nervous exhaustion (intellectual, moral, or physical), and who are of a nervous heredity. He suggests the bromides to subdue nervous excitability, and hydro-therapy as a preventive. In the actual treatment by mercury and the iodides, in cerebral syphilis, some brilliant results; in medullary syphilis, failures in greater number than successes; in tabes, in early stage, complete cure—later, eventual possibility of cure or holding the disease in check; if ataxia is confirmed, absolute powerlessness; finally, in general paralyses, in his experience, failure. He believes that greater success will be obtained in the prevention than in the cure of nervous diseases of syphilitic origin.

THE TREATMENT OF (CARDIAC) VALVULAR LESIONS.

PROFESSOR LIEBERMEISTER, in the *Deutsche medicinische Wochenschrift*, 1891, No. 46, S. 1257, gives us a very thoughtful paper. He recommends good mixed diet especially rich in proteids; water sufficient for thirst; alcohol to be limited or forbidden altogether; weak coffee or tea with two or three times

its quantity of milk is allowed; iron and cinchona preparations will aid nutrition; in summer an elevation of fifteen hundred to three thousand feet, in winter a climate which permits outdoor life. If compensation is disturbed, absolute, continued rest in bed is insisted upon. The remedies recommended to assist in obtaining compensation are digitalis, less frequently strophanthus and convallaria.

THE TREATMENT OF CHOLELITHIASIS.

DR. GEORGE STICKER (*Wiener klinische Wochenschrift*, 1891, No. 51, S. 962) believes that the remedies which will soften and break down the bile are salicylate of soda, calomel, podophyllin in large doses, especially when large amounts of fluid are ingested. For the colic, he strongly recommends belladonna in a well-studied argument, but in case the pain is unbearable, even when this remedy is aided by warm drinks and warm outward applications, he would use morphine with one-tenth part of atropine. He also recommends the spirits of nitrous ether as a remedy against spasm of the sphincter, and believes that Durande's and Rademacher's remedy and chloroform do not dissolve the stone, but rather act as does the nitrous ether. For purgatives he uses castor oil, rhubarb, or senna. As palliative measures he recommends ether, camphor, hot compresses, and local bloodletting.

EUPHORBIA PILULIFERA.

This remedy for dyspnoea has received careful attention at the hands of DR. CH. LIÉGEOIS in the *Revue Générale de Clinique et de Thérapeutique*, 1891, No. 52, p. 815. Administered in an attack of asthma, there rapidly follows relief; the attack is shortened in duration and lessened in intensity. In spite of dust, etc., they breathe more easily. After continued use the attacks diminish in frequency. In dyspnoea of cardiac origin he has not obtained success, other methods, bromide of potash, lobelia, grindelia, and gelsemium being quite as useful. It is not an expectorant, nor indeed is it a remedy for bronchial catarrh.

THE SYNTHESIS OF NATURAL ALKALOIDS.

DR. L. BOUVEAULT (*Revue Générale des Sciences*, 1891, No. 23, p. 787) reviews this subject, discussing the work of Séguin and Derosne, Sertuerner, Pelletier and Caventon, Gautier, Gmelin, Strecker, Liebreich, Selmi, Étard and Brieger as regards alkaloids, toxines, and ptomaines. The labor toward synthesis of Liebig, Wohler, Berthelot, Würtz, Baeyer, and Fischer receives recognition. As instances of partial synthesis are cited creatinine, codeine; of total synthesis, muscarine, betaine, xanthine, conicine. The large amount of work, dating backward only ten years, seems incredible, and when we consider the significance of this subject, we realize that we are but upon the threshold of important chemical results.

THE TREATMENT OF CYSTITIS BY SUBLIMATE.

PROFESSOR GUYON, in a recent lecture, gives the results of his investigations (*La Médecine Moderne*, 1892, No. 1, p. 7, also *Annales des Maladies des*

Organes Génito-urinaires, 1892, No. 1, p. 1). Three elements are considered when a cure is declared: 1, frequency of urination; 2, pain; 3, the purulence of the urine; besides, the capacity of the bladder must be considered. This method has given rise to no accident, not only so far as absorption is concerned, but not even to pain. In tuberculous cystitis an amelioration equivalent to a cure can be obtained; although the pus and frequent urination remain, yet pain always diminishes. In blennorrhagic cystitis precisely the same result is obtained; the patient does not suffer more. In similar conditions of disease of diverse origin, the results are equally good. He does not employ washing unless the bladder is indifferent to tension (distention). If washing is practised it must be with weak solutions. He prefers instillations, 1 part of sublimate to 3000 or 5000, very rarely 1 part to 850, because these do not distend the bladder, and so give rise to pain. The bacteriological study of the urine, when treated with sublimate, shows that it has a powerful preservative action against the microbes of the air, that its antiseptic power is less with cultures of urinary microbes than in cultures of ordinary pyogenic microbes; that its disinfectant power is feeble in purulent urines. In studying nitrate of silver, it was found to be a less powerful antiseptic against the microbes of the air, less, also, against the urinary microbes, and less, indeed, as a disinfectant of purulent urines.

The solutions of sublimate must be made without alcohol, distilled water only being allowed. The instillations are made into the posterior urethra as well, because that always participates in the vesical inflammation. The first instillation does not exceed twenty or thirty drops. Soon a drachm can be injected; the amount is to be regulated by the amount of pain. Instillation must be made into an empty bladder—preliminary catheterization may be necessary. In speaking of the capacity of the bladder, the author remarks that it is physiological rather than anatomical.

[The care with which these observations are made, the evidently accurate statement of facts, as well as the high reputation of the author, mark this as a very valuable contribution to the treatment of a frequently rebellious condition.—Ed.]

ANTIPYRINE IN WHOOPING-COUGH.

DR. E. FEER (*Medical Press*, 1892, No. 2749, p. 24) believes that this remedy should have the first place in the treatment of whooping-cough. Eighty cases were under observation and the dose was in the proportion of that of fifteen grains for a ten-year old child, given morning and evening. When several children in the family were affected with this disease the results were not so good (mutual reinfection—Professor Hagenbach). The remedy was beneficial in four-fifths of the cases. It cannot be ascertained whether it acts as a germicide or as a sedative—very likely the latter, as Demme and Sée have proved that it has a direct restrictive influence upon the reflexes.

TIZZONI'S ANTITOXIN.

DR. EM. FINOTTI reports a case of tetanus successfully treated by this remedy (*Wiener klinische Wochenschrift*, 1892, No. 1, S. 1). A boy of eleven,

after injury, underwent amputation through the forearm. On the tenth day after the operation Professor Tizzoni, of Bologna, forwarded his dog-antitoxin, made from an alcoholic precipitate of blood-serum from a dog rendered immune to tetanus, in which two and a half grammes was injected with all aseptic precautions. During the fourteen days of treatment twenty-eight injections were made of this antitoxin, and of rabbit-antitoxin, which is stronger. This case, with those of Drs. Schwarz, of Padua, Gagliardi and Tizzoni, of Bologna, makes the four now on record.

DR. RUDOLF SCHWARZ'S case is reported in the *Centralblatt für Bakteriologie und Parasitenkunde*, 1891, No. 24, S. 785. A boy of fifteen, two weeks after a wound in the left forearm, developed symptoms of tetanus, for which he was treated with chloral and warm baths, with hypodermatic injections of acet-phenyl (method of Bacelli) for fourteen days. Two and one-half grammes of antitoxin from the serum of an immunized dog was dissolved in water and injected. Five days later the patient was able to arise from bed; the symptoms, however, rapidly improved after the third injection.

The following papers are worthy of notice:

"Mechanical Treatment of Certain Circulatory Troubles: the 'Esocarde' of Dr. Salagi," by DR. ED. BUYS (*Journal de Médecine de Bruxelles*, 1891, No. 22, p. 681). This is a description of a machine in use since 1885, for relief of circulatory troubles of cardiac origin by means of rhythmical compression of the peripheral circulation. Used in active hyperæmia of portal system, intestinal catarrhs and dyspepsias; chorea, chlorosis, neurasthenia, and hysteria; such febrile diseases as intermittent fever, hectic and typhoid fevers.

"Peroxide of Hydrogen," by DR. B. W. RICHARDSON (*Asclepiad*, 1891, No. 32, p. 301). A clearly written paper, abounding in formulæ, practical.

"The Treatment of Suppurating Inguinal Glands," by MR. H. PERCY POTTER (*The Practitioner*, 1891, No. 282, p. 406). Scraping out with Volkman's sharp spoon; cavity washed with chloride of zinc, 1:24; thick pad of antiseptic gauze; firm pressure by spica bandage.

"Some Sequelæ of Influenza," by MR. T. H. DREW (*Ibid.*, p. 408). Respiratory, abdominal, and nervous. Early treatment by salicylates.

"Anti-malarial Action of Methyl-blue," by PROF. G. MYA (*Lo Sperimentale*, 1891, No. 24, p. 473). Results in some cases favorable; more frequently effect nil, or simply transient.

"Lactic Acid as a Prophylactic Against Attacks of Gout," by DR. BÉRANGER-FÉRAND (*Bulletin Général de Thérapeutique*, 1891, No. 48, p. 529) advises the use of thirty grains dissolved in three or four glasses of water, and drunk during the day. Treatment to be employed twenty days out of each month.

"Essence of Santal in Acute Catarrhal Cystitis," by DR. EDMOND WICKHAM (*L'Union Médicale*, 1891, No. 145, p. 808). Twelve to sixteen capsules of six grains each daily.

"Acetanilide and its Derivatives" (*L'Union Médicale*, 1891, No. 146, p. 817; No. 147, p. 829), with a paper on "Phenacetin" (*Ibid.*, No. 152, p. 889). Thorough, practical, and interesting papers.

"In the Physiological Action of Ouabaïn," DR. JOSEPH SAILER (*Thera-*

peutic Gazette, 1891, No. 11, p. 727; No. 12, p. 814) publishes an exhaustive paper. Used in pertussis, $\frac{1}{500}$ to $\frac{1}{1000}$ of a grain; very minute doses might have same action as digitalis; greatest value as a local anæsthetic; superior to cocaine, but extremely poisonous.

"Some Observations on the Use of Piperazin," by DR. HEUBACH (*Notes on New Remedies*, 1891, No. 7, p. 78) reports physiological experiments upon himself; also its use in two cases of uric acid calculi.

MEDICINE.

UNDER THE CHARGE OF

W. PASTEUR, M.D. LOND., F.R.C.P.,

ASSISTANT PHYSICIAN TO THE MIDDLESEX HOSPITAL; PHYSICIAN TO THE NORTHEASTERN HOSPITAL FOR CHILDREN;

AND

SOLOMON SOLIS-COHEN, A.M., M.D.,

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EXPERIMENTAL PROGRESSIVE MUSCULAR ATROPHY.

By means of intra-venous injections of streptococci obtained from a case of erysipelas and cultivated for six months in the serum of rabbit's blood, ROGER (*Comptes-rendus*, 1891, No. 17) succeeded in inducing in rabbits a chronic disease of the anterior horns of the spinal cord semeiologically resembling progressive muscular atrophy. Death occurred between the nineteenth and fortieth days after the inoculation. By the eighth or tenth day the streptococci had disappeared from the blood, while symptoms of amyotrophy had begun to appear. At the autopsy the muscle-fibres were found atrophic, with proliferation of the nuclei of the sarcolemma; the ganglion-cells of the anterior horns were at first partly, and subsequently entirely degenerated. The nerve-roots and the peripheral nerves remained intact.—*Centralbl. f. die medicin. Wissensch.*, 1892, No. 1, p. 9.)

URÆMIA ATTENDED WITH HYPERTHERMIA.

RICHARDIÈRE and THÉRÈSE (*Rev. de Méd.*, 1891, No. 12, p. 991) present evidence demonstrating that uræmia is not invariably attended with sub-normal temperature. As a matter of fact there are not a few instances on record in which the uræmic attack was accompanied by elevation of temperature, regardless of the special form of nephritis that existed, and independently of the existence of any febrile complication. Richardière and Thérèse report three such cases, one of which terminated fatally. The temperature was observed to rise in anticipation of the convulsive paroxysms, and to decline with their subsidence. In one case it was possible to abort a seizure

by a copious bleeding as the temperature began to rise. In a number of recorded cases the hyperthermia of uræmia was associated with hemiplegia. Cerebral œdema has been a common accompaniment. The elevation of temperature is directly ascribed to the uræmic intoxication. It has been shown that normal urine contains matters some of which when introduced into the body of animals cause elevation of temperature, while others cause depression of temperature. It is conceived that the retention of one or the other of these toxic matters in greater degree, by reason of the suppression of the functions of the kidneys in uræmia, results, in the one case in elevation, in the other in depression of temperature.

PNEUMONOMYCOSIS.

FREYHAN (*Berliner klin. Wochenschr.*, 1891, No. 51, p. 1192) has recorded the case of a laborer, twenty-two years old, who had been complaining for a week of languor, malaise, headache, pains in the extremities, anorexia, and digestive derangement. Soon pain in swallowing, and a stitch in the side, accompanied by cough and expectoration, were added. The temperature was elevated slightly above the normal; respiration was accelerated. Excepting a few moist râles, nothing abnormal was detected in the chest, nor was there evidence of disease of the abdominal viscera. Four days after coming under observation, a hemorrhagic effusion in the left pleural cavity was detected. The sputum grew more abundant and was blood-stained, but neither tubercle bacilli nor pneumonia cocci could be found in it. In the course of another week the pleural effusion had become so large that thoracocentesis was performed, affording exit to about a pint of hemorrhagic fluid. Physical signs of infiltration of the lower lobe of the left lung now became manifest. A few days later it was for the first time noted that the sputum presented the odor of fresh yeast. Careful examination revealed the presence of plugs almost exclusively constituted of mycoderma albicans. Mouth and pharynx were found to be normal. In the progress of the case the right lung also displayed evidences of invasion. Finally, however, improvement set in and progressed to ultimate recovery.

DEFECATION BY THE MOUTH.

At a meeting of the Société Médicale des Hôpitaux, DESNOS reported the case of a man who was picked up on the street in an epileptiform attack. In the course of the following day several attacks occurred, which were thought to be hysterical. The most remarkable feature of the case, however, was that the saliva that flowed from the mouth was apparently mixed with fecal matter. Upon inquiry being made, the man stated that for two years he had not passed his stools by the anus, but at six o'clock each evening he passed a stool by his mouth. The man remained under observation only for two days, but his statement was corroborated. At times the evacuation took place without any effort on the part of the patient. Sometimes it occurred during a nervous attack, attended by slight convulsions, during which the patient persistently held one hand upon his back in the course of the œsophagus, where he stated there was severe pain. Several hours before

the evacuation the abdomen was distended and hard, and at its lower portion dull on percussion—manifestations that disappeared after the evacuation had taken place. There was a history of an injury in the upper and inner part of the right iliac region, although no hardness, tumor, or cicatrix could be detected.—*Wiener med. Presse*, 1891, No. 51, p. 1958.

TRACHEAL TUGGING AS A DIAGNOSTIC SIGN OF THORACIC ANEURISM.

DR. H. B. GRIMSDALE contributes to *The Practitioner*, 1891, No. 284, the results of observations made in St. George's Hospital. After admitting the explanation of the phenomenon put forward by Dr. MacDonnell, of Montreal (*Lancet*, 1891), that the cause of the tugging is due to "direct pressure of the expanded vessel (aorta) on the left bronchus," he deals with the conclusions of that observer. The first of these, "that brachial tugging does not occur in health, or in any disease except aneurism," he is altogether unable to accept. With the others he agrees in the main. The third, that aneurisms of the ascending arch do not cause tracheal tugging is corroborated by a case which occurred in St. George's Hospital. Whilst practising the manipulation on himself, the author was surprised to find "tugging," and subsequently he obtained it in two of his friends. He then made a series of observations, in conjunction with Dr. Ewart, on patients, irrespective of their disease, and a further series on medical and surgical patients in the hospital. In 118 cases so examined, tracheal tugging, distinct from "communicated" carotid pulsation, was obtained. Fifteen instances occurred among 55 females, and as many as 36 (57 per cent.) in 63 males. The cases were roughly divided into four groups, according to the intensity of the tug. There are four instances of marked tugging:

1. A case diagnosticated as aneurism of the left portion of the transverse aorta.
2. A case of a patient suffering from emphysema and bronchitis, in whom tracheal tugging was most marked in the position of expiration.
3. A girl suffering from chlorosis, in whom tracheal tugging was usually slight, but became marked on excitement.
5. A man suffering from a very large aneurism, involving the whole of the arch, in whom tracheal tugging was very strong.

Seventeen cases appear as moderate; 20 cases showed it slightly; 7 cases very slightly; the remaining doubtfully, or only under excitement.

Tracheal tugging was found in most varied conditions of heart and arteries. It was marked in one case of anæmia. It was found in cardiac hypertrophy, and also was absent in that condition. It was found in the only case of typhoid fever tabulated, and in the only case of delirium tremens. It occurred in cases of mitral disease and aortic disease, while it was also absent in those conditions. It was not markedly affected by the presence of renal disease.

The two points that strike one in analyzing the cases, are the absence of tracheal tugging in mitral disease and in phthisis.

The case of chlorosis is striking, as the heart and aorta are often below the normal size in this condition.

Several points of interest were noted; variation in degree in the same

individual; greater liability of males; greater intensity during inspiration than during expiration observed in all the cases but one.

In a case of aneurism of the ascending arch, tugging, which was only very slight in the erect position, became more marked on lying down; presumably because the aneurism fell back on the bronchus.

MacDonnell's explanation appears to be quite sufficient in ordinary cases. The effect of respiration on tugging would appear to be due to the closer apposition of the aorta and trachea during inspiration. This, though similar, is greater than the effect of respiration on the carotid pulses.

Assuming tracheal tugging to be due to the pressure of the aorta on the bronchus, there are obviously two ways in which it may be modified: (*a*) by the amplitude of excursion of the aortic wall, (*b*) by the close approximation of the two structures involved. The first, no doubt, accounts for the rarity of tracheal tugging in mitral disease. The general systemic arterial tension is low, and the excursion of the aorta small. It accounts for the general, though not universal, presence of tracheal tugging in aortic valvular disease. The second accounts chiefly for its presence in aneurism, and, I think, chiefly for its absence in phthisis.

Observations show a marked preponderance of "tugging" in people with full chests and prominent infra-clavicular regions, while in stooping patients with flat chests it rarely occurs, even under great vascular excitement.

The author concludes from his observations that the positive value of the sign is small. It occurs in 16 per cent. of cases taken at random, and in all respects is indistinguishable from that in the cases of aneurism observed by him. As a purely negative sign, tugging may be of some value.

EXOPHTHALMIC GOITRE AND MYXŒDEMA.

SOLLIER (*Revue de Médecine*, No. 12, 1891, p. 1000) records two interesting observations in cases of exophthalmic goitre, in conjunction with one of which intermittent œdema developed, and the other of which was associated with myxœdema. The first case was in an emotional woman, thirty-one years old, who presented successively a morbid fear of riding in or in passing carriages on the street; exophthalmos, the more marked upon the left, with some degree of paresis of the external ocular muscles; derangement of menstruation; polyuria and pollakiuria; headache; hoarseness; fine tremor; flushes of heat alternating with feelings of coldness, without elevation of temperature; and increased frequency of pulse. The thyroid gland was atrophic rather than enlarged. From time to time, especially at the menstrual periods and after fatigue or emotion, a general puffiness of the body manifested itself, especially conspicuous in the face, on the neck, and in the extremities. The electric resistance was diminished. Under treatment by means of electricity and hydriatics, the symptoms were almost completely resolved.

The second case was in a woman, thirty-nine years old, who presented pain, stiffness, and intermittent swelling of the extremities. She would weep causelessly and complained of a sense of constriction of the throat and suffocation. The appetite was impaired and capricious. Sleep was deranged. The patient had sensations of heat, sometimes with elevation of temperature; she would feel chilly in the evening and would be awakened from sleep by a

sense of intense heat, with sweats and distress. There were also dry cough and slight nausea and vomiting. Constipation alternated with diarrhœa. Menstruation was suppressed. Vision became double in certain directions. Pain became generalized and prevented movement. For some time there had been polyuria and pollakiuria. The extremities were greatly swollen. The swelling in less degree involved the body gradually, and was greater at night than in the morning. The tumid tissues did not pit upon pressure. The skin was dry and rugous; its color was normal; at divers points it presented spots of pigmentation. There was some itching of the skin. Many articulations were painful and presented evidences of thickening and roughening. On careful observation, slight exophthalmos was detected. The heart was rather rapid and accelerated by emotion. There was fine tremor. The electric resistance was diminished. The thyroid gland could not be felt. As in the first case, treatment by means of electricity and hydiatics was followed by decided improvement. Sollier considers both of the cases primarily instances of exophthalmic goitre in which the thyroid gland, instead of enlarging, became atrophied, with the development of a condition of intermittent œdema in the one case, and of myxœdema in the other.

A CASE OF INTERMITTENT FEVER WITH UNEXPLAINED HIGH TEMPERATURE.

DR. STEPHEN MACKENZIE places on record a case which is not open to doubt in regard to the genuineness of the temperatures registered. He says: "Expressing my doubts as to the genuineness of the temperature recorded in the present case, extraordinary care was taken by Dr. Sequeira and the nurses to prevent any manipulation or fraud, and the high readings of the thermometer were all taken when the instrument was held by the observer in one or other axilla. On one or more occasions two thermometers were simultaneously placed in the same axilla, and were found to correspond, a point of considerable importance where fraud is suspected. It was, as a rule, impossible to take the temperature in the mouth, as the patient was in the condition of a rigor, but when so taken it was raised proportionately."

The patient, aged twenty-seven years, was admitted to the hospital on October 2d. His first attack of shivering occurred in Ceylon eighteen months previously, and he had since been treated in several hospitals. On October 3d the highest temperature was 107.2°; on October 4th, 112.8°; on October 5th and 9th similar readings were obtained; on October 10th two thermometers registered 109°; on October 11th, 112.8°; and on October 12th, 113.8°. The time occupied in the return to the normal line, in some instances, barely exceeded five minutes. Shivering was not always present. The pulse never exceeded 100. The rigors which occurred were very severe, and a short hot stage was followed by profuse sweats. Except on one occasion, the patient did not seem profoundly ill when the high temperatures were recorded—nothing approaching the grave condition of patients the subjects of hyperpyrexia in rheumatic or enteric fever. The periods of hyperpyrexia were, however, exceedingly brief, and this may be taken as an explanation of their innocuousness. On one occasion the nurse found a temperature of 112° F., and went immediately to inform the sister of the ward. On the arrival of the

latter, within five minutes, the temperature was below normal—97.6° F. As recorded in the notes, no enlargement of the spleen accompanied the attacks. "I examined the blood on several occasions, but never detected melanæmia, though some pigment was observed by Dr. Sequeira on one occasion; nor could I detect any changes in the red corpuscles."

ON THE KNEE-JERK IN THE CONDITION OF SUPERVENOSITY.

DR. T. HUGHLINGS-JACKSON makes a short preliminary communication on this subject in the *British Medical Journal*, 1892, No. 1624. He has observed absence of knee-jerks in some cases of emphysema with bronchitis, where the blood has become venous in an extreme degree. As the patients observed were near death, he hesitates to conclude that they were absent as a mere consequence of supervenosity. He quotes the case of a girl of nine years suffering from diphtheria, who was tracheotomized at midnight for urgent respiratory difficulty, producing cyanosis. Before the operation her knee-jerks were absent. On the following day, the cyanosis having then disappeared, the jerks were obtained and remained present until her discharge from the hospital. The knee-jerks of a dog artificially asphyxiated by clamping the trachea were absent in the third stage of asphyxia, having been exaggerated in the earlier stages of the condition. It is suggested that the preliminary exaggeration was owing to the loss of cerebral control over the lumbar centres, the eventual loss being occasioned by the succumbing of these strongly organized spinal centres to the poisonous influence of supervenous blood.

The testing of knee-jerks before and after the administration of oxygen to cyanosed patients may be expected to throw light on the question. If supervenosity is a cause of loss of knee-jerks, that fact may be important in the apoplectic state, and possibly somewhat with regard also to post-epileptic coma. Careful observations on such cases may be productive of valuable results.

ON CONGENITAL OBLITERATION OF THE BILE-DUCTS.

DR. JOHN THOMSON, of Edinburgh, contributes an exhaustive article on this subject to the *Edinburgh Medical Journal*, 1892, Nos. 1808-10. After recording a case occurring in his own practice, he analyzes forty-nine cases of the disease scattered through medical literature, in which the condition was confirmed post-mortem. The main clinical facts are briefly these:

The children themselves are either jaundiced at birth, or they become so within the first week or two of life; otherwise they are healthy and well-nourished. In some cases there is a discharge of normal meconium followed by colorless motions; in others, the feces are devoid of color from the very first. The urine is deeply bile-stained. The jaundice is of a dark-greenish tinge, and lasts till death; and the motions remain colorless. A certain proportion of the children die from umbilical hemorrhage within the first fortnight; and, of those who survive this period, a large number suffer from spontaneous hemorrhage from other situations. The liver steadily enlarges, and the spleen also. After living some months, the children become more

or less emaciated. Fits often supervene, and death ensues in the end in a state of exhaustion from some trifling intercurrent disease.

The analysis of the cases brings out the following facts:

1. All the reported cases do not amount to 60.
2. Out of 96 parents there is undoubted evidence of syphilis in 5 only.
3. Twice over, two cases occur among children of the same family, and in several of the families there is a marked history of infantile jaundice.
4. There is no evidence that the character of the labor has any causal relation with the condition.
5. So also with regard to the state of the child at birth and pre-maturity.
6. Boys are more frequently afflicted than girls: in 34 cases, 21 boys and 13 girls.

7. *Symptoms:*

Outset of jaundice, variable—either at birth or several days after. The action of cold on the body at birth as a cause is unsupported by facts: more probably to be found in the changes in the liver circulation occurring at that period. The jaundice becomes rapidly deeper and assumes a greenish tinge.

In all but one case there was bile-pigment in the urine.

With the exception of two cases, in none was the dark meconium followed by even one motion of normal yellow feces. Colorless intestinal discharges from the first points to a very early occurrence of the obstruction. The stools are mostly white or grayish from the beginning. The admixture of green lumps in a few cases at the time when the obstruction must have been complete, may have been due to the administration of mercury, or possibly result from the presence of chromogenous bacilli in the intestine.

Vomiting is mentioned in 9 cases.

The occurrence of spontaneous hemorrhage is one of the most characteristic clinical features. It was noted in fully one-half the cases. Hemorrhage in infantile jaundice is not, however, invariably followed by a fatal issue. The presence of ptomaines, or some other similar organic poisons, in the blood, owing to the withdrawal of the bile from the chyme, is suggested as a possible cause of such hemorrhage.

Fits are mentioned as having occurred in 10 cases.

The degree of emaciation depends on the duration of life. Excluding the cases dying from umbilical hemorrhage, the large majority of the patients lived more than a month.

8. *Post-mortem appearances:*

The liver is always more or less enlarged, and frequently of a dark-green color.

The bloodvessels are described as normal in 16 out of 20 cases; in the remaining 4 (which were probably syphilitic) there was obliteration of the portal vein.

The situation of the obliteration of the ducts varies almost indefinitely. There does not appear to be any seat of election. In many cases inflammation evidently continues to spread after obliteration is complete, and affects the rest of the ducts and gall-bladder. Dilatation of the canal above the obstruction is not invariable. The contents of the gall-bladder vary much.

In all cases where it is definitely stated that the motions were colorless from the first (with one exception) there was no bile found in the gall-bladder.

In 10 cases examined microscopically, cirrhosis of the liver was present in 9.

The author quotes several cases of infantile jaundice with symptoms similar to those of obliteration of the bile-ducts, but with pervious ducts. The resemblance is such that he cannot avoid the conclusion that they are examples of different stages of the same disease. The striking point is the shorter duration of the cases with pervious ducts.

The lesion of the ducts has been ascribed to: 1. Peritonitis and its results, acting from without. 2. An inflammatory or other lesion of the ducts themselves. 3. An arrest or defect of development.

The author regards the last of these as being the most probable etiology. A congenital narrowness or irregularity of the lumen of the ducts of such a nature as to render them unnaturally liable to disease from interference with the proper performance of their function, appears to him to "afford a very necessary help in explaining the causation of a large proportion, if not of all the cases."

Congenital syphilis is not considered to be of essential importance as an etiological factor.

The author summarizes his conclusions as follows:

1. In the great majority (if not all) of the cases there is, to begin with, a congenital malformation of the bile-ducts due to defective development.

2. This malformation probably affects a considerable extent of the walls of the ducts, and may consist in narrowness of their lumen.

3. The interference with the outflow of bile thus caused gives rise to catarrh, and, finally, to blocking and obliteration of the ducts, owing to the inflammatory process spreading to the walls of the ducts and gall-bladder.

4. This progressive inflammation goes on slowly spreading, the local condition getting gradually worse during many months, if the patient lives.

5. The obliterated ducts or gall-bladder, or portions of them, may entirely disappear, not even leaving a distinct band of fibrous tissue to indicate their original position.

6. The obliteration generally becomes complete at an early but variable period of intra-uterine life, but occasionally it does not occur till after birth.

7. In a few cases the inflammatory process spreads to the peritoneum, and possibly the presence of inherited syphilis may favor this extension. The occurrence of peritonitis is probably always secondary to the blocking of the ducts; and syphilis has nothing to do with the original lesion in them.

8. When the lumen of the duct is so far encroached upon as to obstruct the free passage of bile into the intestine, "biliary" cirrhosis of the liver begins, which, as it goes on, causes increasing interference with the most important functions of that important organ. The result of this is the setting up of a sort of chronic blood-poisoning, which causes vomiting, spontaneous hemorrhage, and convulsions, and gradually leads to emaciation, diminished vitality, and death.

SURGERY.

 UNDER THE CHARGE OF

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THE SURGICAL TREATMENT OF TUBERCULOUS CERVICAL GLANDS.

OWEN, in writing on this subject (*The Practitioner*, London, vol. xlvii., No. 5), emphasizes the importance of early operation. The routine treatment of iodine and poultices he considers unsatisfactory, and the administration of sulphide of calcium has been in his hands the "veriest impostor of the Pharmacopœia." Even a visit to the seaside is considered as so much time wasted. Aspiration of a suppurating gland is characterized as a half-way practice. Once a gland has broken down, an operation becomes imperative. If the surgeon does not interfere, Nature performs the work, but at best slowly and imperfectly, and with much greater deformity than after the surgeon's knife.

In those cases which are seen early the operation is a very simple affair, but unfortunately comparatively few consult the surgeon at this stage.

The operation, to be successful, must deal radically with every affected gland and sinus. Due regard must be had for the various important structures of the neck. Of these, the internal jugular vein causes the greatest anxiety, these growths at times being intimately connected with the wall of this vessel, which is frequently seen exposed at the bottom of the wound. The author refers to a well-nigh fatal attack of dyspnoea in a child on removing a sarcomatous tumor of the neck. Owing to the difficulties and dangers of these operations, it is advised to have a skilled anæsthetist and a familiar and trustworthy assistant.

It is considered a mistake to attempt to work through too small an incision or to spare the scalpel at first, though subsequently the more blunt dissection the better. Diseased skin should be sacrificed, and when all is completed the cavity may be filled with powdered boric acid and covered with an anti-septic dressing.

If the wound be a clean one primary union may be aimed at by the introduction of sutures. When the glands are broken down, however, and the curette has been employed freely, the wound should not be closed. Occasionally a second cleaning and scraping is necessary before complete healing occurs.

The author does not consider the risk of general dissemination of tuber-

culous matter after such an operation to be great, but believes, on the contrary, that the patient has been rid of much of the danger of general tuberculosis. [This is all in accord with modern teachings, and has been especially emphasized by the writer and by Mr. Treves. The one point which seems open to dispute is, as to the value of such measures as change of climate. If the case is seen early and is not rapidly progressive, and if no glands are as yet broken down or caseating, it is unquestionable that sea air or mountain air, cod-liver oil and the iodide of iron, limitation of the movements of the head by means of a collar like an old-fashioned "stock," attention to any defects of neighboring skin or mucous surfaces, etc., may sometimes be followed by resolution. Operation, though advisable, and, indeed, necessary in the great majority of cases, need not be considered the invariable rule.—J. W. W.]

SPEAR WOUND OF THE ABDOMEN; RECOVERY.

Ross reports (*Lancet*, London, 1891, vol. ii., No. 24) from Molong, New South Wales, having been called to see a young male aborigine who had received a most dangerous spear wound in the epigastric region during a quarrel. On arriving it was found that the patient had been removed to an adjoining hotel, the spear, which was eight feet in length, still remaining in the wound, the projecting handle being held by a mate. The weapon entered to the left of the median line, a little below the ensiform cartilage. Previous efforts at extraction by the patient's comrades had failed, and Dr. Ross by careful examination found extraction impossible on account of two sharp pointed barbs. It was therefore decided to remove it posteriorly. Accordingly the spear was sawed off near the wound after being fixed in the direction in which it was desired to extract it. By pressing on the sawed end of the weapon, and making a small incision posteriorly, the spear was removed without difficulty and with but slight hemorrhage. The edges of the wound were cleaned and stitched and a bandage applied. During the night the patient escaped and joined his mates in the camp. On the second day he had radiating pains in the abdomen and some distention. On the following day it was found that the plaster and stitches had been removed, the anterior wound was gaping and there was an ichorous discharge. The patient was bathing the wound and abdomen with the young undershoots and leaves of the red gum tree (*Eucalyptus nostrata*). Improvement set in from this time, and on the sixth day the abdominal wound was closed and recovery was uninterrupted. The spear removed measured about seven inches. Dr. Ross attributes the favorable result to the use of gum leaves, and believes they may have a wide field of usefulness.

INFLAMMATORY STRICTURE OF THE URETERS.

WATSON (*Journal of Cutaneous and Genito-urinary Diseases*, vol. ix., No. 11) records two cases of this rare condition, and adds four cases collected from medical literature. Unfortunately, the diagnosis is obscure, and it does not seem possible to do much in the way of relief of the condition.

The first case seen by the writer was that of a man twenty-one years of age. He had had gonorrhœa, lasting a few weeks, a year before coming under observation. A week before presenting himself he attended a boat-race, and

on returning home he had a chill, after which the urine was much diminished in quantity. At the end of sixty hours a tumor was seen in the left hypochondrium, extending backward toward the kidney, and being apparently connected with it. This was aspirated at the end of the third day through the abdominal wall and a large quantity of urine of low specific gravity withdrawn. In twelve hours the tumor had refilled. The patient was distinctly uræmic.

A lumbar nephrotomy was performed. On opening the kidney a large quantity of urine gushed out and the finger entered a very large cavity. The ureter was explored for some distance by a sound, but no obstruction found. The patient died forty-eight hours after operation, in uræmic coma.

The autopsy showed that the right kidney was transformed into a big sac, lined with pyogenic membrane, all the parenchyma of the kidney being destroyed. The ureter, one inch below its exit from the pelvis, was the seat of a dense deposit of connective tissue, probably resulting from chronic inflammation. The constriction would barely admit a fine probe. The left kidney was the seat of an extensive hydronephrosis, and the ureter widely dilated to within an inch and a half of the bladder, at which point was a similar connective-tissue deposit to that described in the right ureter. There was a doubtful history of the passage of a renal calculus eight months before death.

The second case was a male, aged thirty-eight years. For eight or ten years the patient had had occasional pain in the right renal region. The urine contained pus, and at times small blood-clots. Two pea-sized calculi were passed without any pain at the time or preceding. The patient began to suffer from great irritability of the bladder, for which drainage was advised, and accordingly the membranous urethra was opened and a large tube introduced. The patient did well for a week, when epididymitis developed on the left side, followed the next day by hiccough and vomiting, and death on the eleventh day.

At the autopsy the left ureter was found obliterated by dense connective tissue at a point two inches above the bladder. Above this point the ureter was widely dilated, and the kidney was simply a thick-walled sac. The right ureter was dilated from the bladder to within one-half inch of the kidney. At this point it was bent upon itself, and was so narrowed by connective-tissue growth as to only admit a large steel knitting-needle. Pyelo-nephritis was present.

The histories and symptoms in the four cases collected were much the same as those described, except one, in which suppression of urine and polyuria alternated for some time before death. All the cases proved fatal. In one case the condition of but one kidney is noted. In the other five, both kidneys were more or less seriously disorganized.

OBLIQUE OSTEOTOMY OF THE FEMUR.

TERRIER and HENNEQUIN (*Revue d'Orthopédie*, No. 1, 1892) describe a new operation in the following case: Suppurating left-sided coxalgia; luxation of the more or less altered head of the femur into the external iliac fossa, where it had formed firm adhesions; arrest in development of iliac bones and bones of the entire extremity; atrophy of the muscles of the

pelvis and of the extremity; enlargement of the great trochanter; slight genu valgus. A six-inch incision was made from the middle of the anterior surface of the great trochanter down the anterior surface of the femur, dividing all tissues to the periosteum. This was laid bare and a four and one-half inch incision was made from the external aspect of the great trochanter obliquely across the femur to its inner aspect; the periosteum was raised, and the femur divided by an osteotome in a plane at an angle of 40° with the antero-posterior plane of the thigh. In order not to injure the neighboring arteries anteriorly and internally, the leg was flexed upon the thigh and used to rotate the lower portion. The inferior fragment was seen to pass posteriorly to the superior, and from being external became postero-internal. This corrected simultaneously the adduction and internal rotation. The wound and upper thigh were dressed antiseptically; the lower thigh and leg were padded with ordinary wadding and bandage, over which a handkerchief-bandage was placed in figure-of-eight, the upper circle surrounding the thigh in its upper fourth, while the lower reached the posterior surface of the leg at the junction of its middle and upper thirds; at this point was attached the ordinary extension cord, with weights increasing from six to twelve pounds; the whole was placed in a padded splint and held in slight abduction and rotation. The patient made a good recovery, motion under traction being used to produce a movable joint, and upon removal of the splints showed a lengthening of 2.7 inches, leaving a difference of only 0.8 of an inch between the limbs. The new joint was movable, allowing an angle of less than a right angle between the femur and pelvis without difficulty, pain, or crepitation, and the patient could walk with foot flat on the ground for half an hour at a time.

The special points of the operation are: the obliquity of the incision, the lengthening of the femur, and the formation of a movable, useful new joint, which is the most instructive and interesting feature, and was accomplished by the oblique incision and gymnastics under traction.

BROCA (*Ibid.*) reports the following case with equally gratifying results from the same operation. The patient's left leg was five inches shorter than the right. Flexion was very pronounced, it being necessary to flex the thigh to a right angle with the pelvis to destroy the lumbar curvature. Adduction was also pronounced, the left knee lying to the right of the median line of the body. After operation, by the method described above, the difference in length was but 0.7 inch, measured from iliac spines to internal malleoli; the adduction had entirely disappeared, the toes pointed slightly outward, and the angle of the femur with the back lying flat was 150° .

SCHWARTZ (*Ibid.*) reports two cases of subtrochanteric osteotomy. Case 1: Patient, aged nine and a half years; suppurating left-sided coxalgia with luxation of the head of the femur into the external iliac fossa, where it was immobile; angle less than a right angle necessary between femur and pelvis, to correct lumbar curvature; adduction marked, with external rotation; shortening 4.7 inches. After oblique subtrochanteric osteotomy, the limbs were parallel; slight external rotation; no flexion; shortening 2 inches. Case 2: Male, aged twenty-seven; right-sided ilio-femoral arthritis, with ankyllosis after blennorrhagia and gonococcic infection. Flexion was slight; adduction marked; obliteration of the gluteo femoral fold; and atrophy of the

limb, especially the thigh and leg. Cuneiform subtrochanteric osteotomy of femur was followed by recovery in good position.

A CASE OF HYDATID OF THE FEMUR.

MR. WEBB (*Australian Medical Journal*, vol. xiii., No. 11) reports the following case: Patient, male, aged twenty-six, was said to be suffering from sarcoma of the femur. Five months previously he had had typhoid fever, and on recovery he had severe nocturnal pains over the trochanter of the left femur; the leg began to swell, and a localized well-defined tumor was found over the seat of pain. This tumor was still easily seen, although the swelling had subsided, and the left thigh was no larger than the right. The tumor was the size of half an orange, tender, hard, and without distinct fluctuation. Malignant disease was excluded by the absence of late increase in the size of the tumor and the undilated condition of the veins; its size excluded periosteal tumors, and it seemed therefore probable that it was an abscess, although the fluctuation was indistinct. After anæsthesia, an incision was made in the tumor, when hydatid cysts escaped and the nature of the tumor was evident. The whole trochanter and four inches of the shaft had become detached; the only connection remaining between the head of the bone and the shaft was a thin shell of bone. About two or three hundred cysts escaped, but there was no mother cyst, the usual condition in bony cysts. The obscure fluctuation was due to extravasated fluid beneath the periosteum. With antiseptic dressing the patient was making a good recovery, and was gaining in weight and appetite.

VASCULAR TUMOR OF THE URETHRA.

McMORDIE (*Medical Press and Circular*, vol. lii., No. 2746) records a vascular tumor near the neck of the bladder, causing pain and retention of urine. The patient, a married woman, aged fifty-four, had suffered for eight months from frequent and painful micturition, with uncontrollable desire to repeat the act every five minutes; there was also weakness, loss of flesh, and sleeplessness. Ten ounces of urine were drawn off, and a tumor detected by the catheter. Under anæsthesia the urethra was dilated by a three-bladed dilator sufficiently to admit the passage of a finger, and a vascular tumor was found near the neck of the bladder and easily removed. Pressure was applied by plugging the vagina, and the urine drawn at intervals by a catheter. The patient made a good recovery.

INTRA-GLANDULAR ENUCLEATION OF GOITROUS NODULES BY THE BLOODLESS METHOD.

POPPERT contributes an interesting article (*Deutsche med. Wochenschr.*, 1891, No. 52) on the surgical treatment of thyroid enlargements, in which the operation proposed by Socin is strongly advocated. The latter writer has pointed out the frequent existence of the nodular form of thyroid enlargement, and has laid down a definite method of dealing with circumscribed solid and cystic growths. Hyperplasia of the gland is likewise apt to be local rather than general. The nodules may be single or multiple; they are

usually round tumors with smooth surfaces. The surrounding gland-tissue is unchanged, being simply pushed aside. For such cases Socin's enucleation is the most rational of all operative procedures. The objection that it does not prevent recurrence holds for all other methods of treatment, while it has the great advantage of removing only the degenerated tissue, while the healthy gland substance is not interfered with. Although the operation is not without the possibility of danger and difficulties, it is conceded to be usually very easy; hemorrhage is insignificant, and the time required is short. Hemorrhage may be considerable if the operator passes out into the soft glandular tissue, or if the masses lie deeply imbedded in the gland, requiring incision through its substance, or when adhesions exist. The use of the elastic ligature has rendered the operation practically bloodless.

The method of Bose is as follows: An incision is made over the enlarged half of the gland, and the loose tissues overlying the capsule of the gland separated by blunt dissection, so that the tumor in its largest diameter may be taken out of the wound. An elastic ligature is applied about the base of the tumor, which means beyond the largest diameter. Free incisions may now be employed without hemorrhage resulting, and any nodules are removed. After removing the ligature the gland is compressed for a short time, or, if necessary, small vessels may be ligated.

Of 20 cases coming under the writer's observation in the last two and one-half years, 16 were examples of nodular or cystic growths and 4 of total degeneration of the gland. The recognition of a distended cystic tumor is, as a rule, easy, but if multiple nodules are present it becomes difficult to tell which form of the disease is present.

The operations in the above 16 cases are detailed, and from these it is argued that the method of ligature in cases of partial hyperplasia was entirely feasible, as well as the removal of the new-growth. In opposition to this it was found that the diffuse form of the disease was much more difficult to deal with. It is much less movable, is firmer, more adherent to surrounding tissues, and the removal requires much more time.

If the enlargement is in the middle line—in the isthmus—the ligature of the pedicle is difficult, and is apt to slip. In these cases it is well to make the incision as for semi-lateral extirpation of the gland, and to lift with the nodule the half of the gland, and to pass the ligature around this. In some cases the rubber tube caused some difficulty in respiration, if narcosis was not complete, and occasionally it was necessary to remove the ligature until anaesthesia was produced again. The ligature must not be applied too close to the trachea. Cysts may be removed as easily as nodules. It is recommended to make a circular incision around the cyst, and so enucleate without rupturing its wall.

The author believes that in circumscribed growths, in the future, the only operation that will be admissible will be the bloodless intra-glandular method. The operation can be easily and quickly done, and hemorrhage is usually slight. If the remaining gland is hypertrophied, hemorrhage is more apt to occur after removal of the ligature, and when present is controlled by passing deep as well as superficial sutures.

THE TREATMENT OF STRICTURES DUE TO INCOMPLETE RUPTURE OF THE PERINEAL URETHRA.

GUYON, in a clinical lecture at the Hôpital Necker (*Le Mercredi Médical*, 1891, No. 51), spoke of strictures following incomplete rupture of the deep urethra, and exhibited five cases.

These cases are characterized by rapid formation of the stricture, with a persistent tendency to recurrence. The contractile power of the new tissue is never entirely overcome.

In case of complete rupture of the urethra, the rule is to incise the perineum at once, without making any attempt at catheterization, and to join the two ends of the urethra after having passed a sound. Guyon has been a strong advocate of this true surgical principle, and advises in addition the immediate sewing of the ends of the urethra, if they are not too irregular. If the ends are not sufficiently even they may be resected.

This treatment would probably be satisfactory in cases of partial rupture of the urethra, if done at once; but when one is compelled to operate for conditions due to lesions already formed it is better to remove the cicatricial constriction by partial resection of the urethra. The results, both primary and remote, are satisfactory in the highest degree, the more so when compared with other plans of treatment, including external urethrotomy.

The object of the resection of the urethra is to remove the hard, thick, and retractile cicatrix and to obtain linear union, with the result of a smooth scar. Total primary union is frequently obtained—even more frequently than could be expected—and uninterrupted healing takes place in spite of slight contamination by urine. [See AMERICAN JOURNAL OF THE MEDICAL SCIENCES, March, 1892, p. 331.—J. W. W.]

TUMOR OF THE BRAIN; AUTOPSY.

BULL (*New York Med. Journ.*, vol. lv., No. 2) reports the case of a man, aged forty-five, who consulted him in April, 1890, on account of inequality of the pupils, which had then existed about a year. He also complained of ill defined brain and nerve symptoms, which were believed to be *petit mal*.

On examination, there was found to be marked ptosis of the right upper eyelid and paresis of both internal recti. The left pupil was more than twice the diameter of the right. There was crossed diplopia. R., $\frac{3}{CC}$; L., $\frac{5}{CC}$. The right eye was the seat of a moderate neuro-retinitis, with two or three small hemorrhages in the retina near the margin of the disc. The field of vision was normal and color-sense unchanged.

Under iodide of potassium and mercury the neuro-retinitis and muscular paresis disappeared.

Later, attacks of vertigo were noticed, and these gradually grew in intensity; the left side became anæsthetic, and well-marked epileptiform convulsions developed. The condition of the patient remained unchanged until January 28, 1891. The patient had retired in his usual health, and was awakened about 2 o'clock in the morning with violent pain in the occipital

region. He soon became delirious, coma followed, and he died at 11 A.M. This was the first time pain in the head was complained of.

The autopsy was made the same afternoon. The dura was thickened and adherent to the skull; the convolutions were flattened. The anterior half of left hemisphere was larger than the right. Section through the left frontal lobe disclosed a tumor two inches in longitudinal diameter and an inch and three-quarters in transverse diameter, with a broken-down centre. The anterior portion was firmer than the brain substance; was grayish-pink in color, with a few small hemorrhagic spots. The growth reached to within two inches of the anterior extremity of the hemisphere. The tumor involved the corpus callosum, and protruded downward from the roof of the left lateral ventricle. Microscopical examination proved it to be a gliosarcoma.

PERI-URETHRAL ABSCESS DUE TO GONOCOCCI.

CHRISTIANI (*Revue Médicale de la Suisse Romande*, 1891, No. 10) contributes further knowledge on the pyogenic properties of the gonococcus of Neisser.

Since the discovery of this coccus in blennorrhagic discharges it has been sought for in all the series of affections which are observed as complications of gonorrhœa. It has been found in pyosalpinx following blennorrhagia, in suppurating arthritis consecutive to gonorrhœal conjunctivitis in an infant, in Bartholinitis, in suppurating adenitis following gonorrhœa, and in epididymitis.

In other cases—blennorrhagic endocarditis, for instance—streptococci have been found instead of gonococci, and in cases of arthritis and hydrocele due to gonorrhœa no bacteria have been found.

Some authors affirm that the gonococcus is never found alone, but always in conjunction with other species, especially pyogenic staphylococci. Pellizzari, in three peri-urethral abscesses, found only the gonococci, and this observer believes that the gonococcus can cause suppuration, and that in those cases in which other cocci are found the latter gain access to the seat of suppuration after it is established by the former.

Wertheim demonstrated the phlogistic action of the gonococcus on the peritoneum of animals, peritonitis resulting.

The gonococci are mostly found in the pus corpuscles, but a certain number are outside of the cells. This coccus is generally seen as a diplococcus—in pairs; it stains readily with anilin, and can be discolored by Gram's method; these are its main distinguishing features. Cultures have been attempted, but without success.

The conclusion of the writer is, therefore, that the gonococcus of Neisser has pyogenic properties analogous to those of staphylococci and streptococci. This is not especially to be wondered at, as it has been found that the typhoid bacillus and the pneumococcus, as well as others, are capable of causing abscesses, and the action of the gonococcus on the mucous membranes results in a kind of suppuration.

[The rapidly increasing evidence as to the definite relation between the gonococcus and gonorrhœa is strengthened by the discovery of this microorganism in the majority of the complications. It must not be forgotten, however, that demonstrative proof is still wanting. Neither gonorrhœa nor

any of the diseases above mentioned has yet been produced by inoculation of pure cultures of the gonococcus. The circumstantial evidence of its etiological relation to gonorrhœa is unmistakable, but the majority of cases of the latter disease are instances of mixed infection, the ordinary microbes of suppuration being usually present.—J. W. W.]

DERMATOLOGY.

UNDER THE CHARGE OF

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NÆVI.

HALLOPEAU (*Le Progrès Médical*, No. 28, 1891) considers that the old division of nævi into pigmentary and vascular is too narrow in scope, and that the term should include all those benign neoplasms of an embryonal nature, as has been recently suggested by Pollitzer. The following division is made: 1. Nævi due to the proliferation of distinguishable elements, as, *a*, smooth, pigmented nævi, nævi spili; *b*, hairy nævi; *c*, kerato-hairy nævi (with proliferation of the sheaths of the hair-follicles; *d*, molluscoid nævi, molluscum fibrosum, seborrhœic warts with proliferation of the connective tissue, *e*, nævus molluscum lipomatodes (with proliferation of fat; *f*, verrucous nævi (with proliferation of papillæ; *g*, sebaceous adenomata nævi; *h*, sudoriparous adenomata nævi; *i*, corneous nævi of the sudoriparous orifices; *j*, kerato-dermic nævi (partial ichthyoses); *k*, vascular nævi, flat and tuberous; *l*, lymphangiomata. 2. Nævi due to proliferation of non-distinguishable elements, as epithelial cellulomata, hydro-adenomata, syringo-cystadenomata. 3. Mixed nævi.

Kerato-pilous nævus is illustrated with a drawing showing the affection involving the region of the forearm and hand supplied by the distribution of the cubital nerve. It presents the characters usually attributed to keratosis pilaris. Molluscum fibrosum is regarded as a nævus because it is often congenital, and frequently occurs together with nævi, as well as upon other nævi. The nævoid nature of certain of the sebaceous adenomata has been recently established by Pringle, and the sudoriparous adenoma described by Perry is likewise of similar origin. The case of kerato-dermia localized at the orifices of sudoriparous glands, occurring in linear course, as published by Hallopeau and Claisse, must also be grouped here. The appearance in the early period of life of certain palmar and plantar kerato-dermias must be considered as nævoid in character. In classifying here lymphangioma circumscriptum, the author is supported by Török, who attributes these lesions as due to a congenital defect of development.

The same may be said concerning the tumors called epithelial cellulomata, hydro-adenomata, and syringo-cystadenomata, which are congenital, and are

reported by Török, Jacquet, and Quinquand to be due to an abnormal development of embryonal germs. The mixed nævi comprise the verrucous and hairy, the molluscoid and vascular, and the like. Several drawings showing the localization of the lesions accompany the article, and are of interest, especially that illustrating the kerato-dermic nævus of the orifices of the sudoriparous glands situated on the sole of the foot.

ALKALIES IN UNIVERSAL PRURITUS.

C. LANGE, of Copenhagen (*Journal of Cutaneous and Genito-urinary Diseases*, 1891) has obtained prompt and favorable action from sodium bicarbonate combined with lithium carbonate in four cases, in all of which the usual remedies had failed. The pruritus in one case, a lady aged fifty-one, had localized itself in the genital region, and was exceedingly severe. In the urine of two other patients an abundant precipitate of uric acid and urates was found.

TWO CASES OF DERMATITIS HERPETIFORMIS DEVELOPING AFTER SEVERE MENTAL EMOTION AND SHOCK.

GEORGE T. ELLIOTT (*Journal of Cutaneous and Genito-urinary Diseases*, 1891) reports two cases of this disease, one occurring in a woman, the other in a man, resulting from nervous shock from death in the family, both patients having been at the time in a state of mental depression. The disease in both instances was of an aggravated type, characterized by erythematous, papular and vesicular lesions, with pain, burning and itching. Recurrences of the disease seemed to be brought on by anxiety and mental worry, to which the patients were from time to time subjected. The author refers to ten cases in the literature of the subject where the disease was traced to the same set of causes, and believes that the affection should be regarded as a dermato-neurosis.

PIGMENTARY SYPHILODERMATA.

FIVEISKY, of Moscow (*Annales de Derm. et de Syph.*, 1891, No. 5) has studied this subject for some years upon the prostitutes of the hospital Miasnitzkaïa, with the following conclusions: They occur during the secondary period, and occupy by preference the neck and sometimes other parts of the body, with the exception of the face, scalp, the internal face of the nipples, the region of the buttocks, and the forearm. 2. The leucoderma of this form is always syphilitic. 3. Sometimes it coexists with gummata. 4. They occupy ordinarily a region plainly in sight (the neck), the diagnosis being easy, and their duration of several years may be regarded as one of the most significant signs of the secondary period. 5. They occur most frequently upon women, but generalized forms are more frequent in men. 6. They last usually from one to seven years. 7. They are not amenable in a sensible manner to either mercury or the iodides, but are more marked where mercurial treatment has not been employed. 8. They appear under three forms, mottled, spotted, and retiform.

A NEW VARIETY OF TROPHO-NEUROSIS OF THE SKIN.

MM. HALLOPEAU and LARAT (*La Semaine Médicale*, 1891, No. 47) describes a condition of the skin characterized by dyschromia and lichenoid eruption. Reference is made to the various dyschromias due to nervous origin which have been described by authors, and to the concomitant phenomena, consisting of disturbances of sensibility and of the vascular system, and disorders of secretion; to which may be added, as shown by a case of the author's, impaired nutrition of the hairs. A case recently observed shows that lichenoid papules may also be produced by the same causes. They make a résumé of their observations as follows: There exists a dermatosis characterized by achromatous patches surrounded by a papular border and by increased pigmentation. This dermatosis is probably a cutaneous manifestation of hysteria. The papules, lichenoid in kind, may be of a tropho-neurotic origin. They are not necessarily akin to pruritus. Cutaneous electrization in the form of bath, with the faradic current, seems to be indicated.

ON A GENERAL INFECTIOUS COMPLICATION IN LUPUS VULGARIS.

V. LESPINNE (*Le Mercredi Médical*, 1891, No. 35) believes that there may be produced in the course of the evolution of lupus a special general complication due to absorption of toxic microbes taking place from the surface of the ulcer, this poisoning announcing itself by a sharp increase of temperature, with typhoidal state, catarrhal phenomena of the mucous membranes, and even symptoms of the serous membranes. This complication may be the signal for the period of invasion of the whole organism, general tuberculosis taking the place of the local tuberculosis of the skin.

MEDICATED SOAPS.

A. SANTI, of Bern (*Correspondenzbl. für Schweizer Aerzte*, No. 13, xxi. Jahrg. 1891) speaks in praise of medicated soaps, which, within the last few years, since they have been manufactured (especially abroad) to suit the requirements of the physician, have come into good repute. Soaps easily penetrate the epidermis, hence drugs are more active in this form than in ointments. The method is cleanly, cheap, and more agreeable to the patient than that of ointments. The soaps manufactured according to the formula of Unna are first considered. The soap-mass, in the first place, reacts absolutely neutral, and is composed of the best beef tallow and freshly prepared soda and potash lye, two or three (in summer) parts soda to one of potash, which latter acts more effectively than soda on the horny layer of the epidermis. To obviate the drying effect of even neutral soap on the skin the soaps are all superfatted with about four per cent. free fat, for which purpose olive oil is used. The following soaps in cake form are mentioned. They contain marble, ichthyol, salicylic acid, zinc oxide and salicylic acid, tannin, tannate of soda, oxide of zinc and tannate of soda, zinc tannate, rhubarb, tar, sulphur, tar-sulphur, camphor, camphor-sulphur, iodide of potassium, soda, and naphthol-sulphur.

A superfatted potash soft soap has also been made by Unna and Micek,

which occupies a position midway between ointments and soaps, and is designated *sapo unguinosus*. Of these medicated soaps may be mentioned *sapo cinereus unguinosus*, useful for the introduction of mercury into the system by inunction, and *sapo unguinosus ichthyolatus*. A desirable corrosive sublimate soap has been produced by Geissler, of Dresden.

Eichhoff has prepared a series of superfatted soaps, the principles of manufacture being much the same as those of Unna and Micek. The list comprises resorcin-salicylic, resorcin-salicylic-sulphur, resorcin-salicylic-sulphur-tar, quinia, hydroxylamin, iodoform, creolin, ergotin, iodine, and salicylic-creasote.

As an advance of great worth in soap therapy there remain to be mentioned the fluid soaps introduced by Buzzi, of Lugano, and manufactured by Keysser, of Hanover. A neutral soap basis is first made, which is either superfatted with lanolin or made alkaline by carbonate of potash (one per cent. or more). A list of fifty different soaps is presented, some being neutral, others alkaline and superfatted. There are some advantages in these fluid soaps over the harder soaps, and the author commends them as being decidedly useful.

MINERAL WATER IN SKIN DISEASES.

F. CERASI (*Journal of Cutaneous and Genito-urinary Diseases*, 1891, from *Gazetta Med. di Roma*) speaks of the value of Ceresole Reale water in some skin diseases, especially in those due to nervous disturbances. The water is ferruginous, acidulous, slightly alkaline, and contains a small amount of arseniate of soda. It is much used in England, Egypt, Switzerland, and Northern Italy, the spring being favorably situated in the last-named country between Piedmont and Savoy. Its virtues are considered by the author and by others to be due to the presence of the arsenic, but toxic symptoms are never encountered from its use. It acts as a nervine tonic. The average dose is one bottle taken before meals, and continued for one or two months. The general health usually improves. Several cases of cure of obstinate cutaneous disease are reported.

TREATMENT OF ECZEMA.

VEIEL, of Cannstatt (*La Semaine Medicale*, 1891, No. 47) discussed this subject before the recent Congress of German Dermatologists. In the first place, he does not think that every case of eczema is curable—especially is this true of hereditary cases. A second question to decide is whether internal treatment is demanded or not, and as there are no specifics against eczema he is of the opinion that internal medication is useless unless there are complications. In acute weeping eczema the dusting powders are recommended, and for the more persistent forms Lassar's paste and Pick's salicylic soap. When the eczema is in a squamous state a five per cent. tannic acid ointment is useful; and when chronic, the treatment of Pick with the gelatin sublimate and the plaster of salicylic soap give the best results. The salicylic rubber plasters of Unna are excellent in eczema of the palms and soles, but active irritation should be guarded against. The weeping eczemas of the scalp dry quickly under a salicylic ointment of ten per cent. strength; or if this be not

successful tar may be used, a remedy which as yet has not been supplanted by any as valuable. It is very difficult to know when to employ tar; the skin should be taught to tolerate it. We should use it only upon dry eczema, but nevertheless there are some cases of weeping eczema of the face which yield to it. The mildest form is tar soap. The alcoholic solutions of tar also act rapidly, although oil of cade is preferred. If there is much infiltration, chrysarobin ointment and pyrogallol ointment, the former two per cent. strength increased, if possible, even to ten per cent. Sulphur is seldom employed by the author except for seborrhœic eczema and eczema of the beard.

CHAULMOOGRA OIL IN THE TREATMENT OF LEPROSY.

BERGÉ (*New Orleans Medical and Surgical Journal*, 1891) extols this remedy, and gives the notes of three cases in which it was employed with great benefit. The results seem remarkable. The dosage was ten drops of the oil in a spoonful of water three times daily, gradually increased until forty-five drops three times daily were taken without disturbance of the alimentary canal, except in large doses, when the bowels were liable to be acted upon too violently. The author thinks the oil should be regarded as a specific. Its absorptive properties were manifested in a striking degree upon the tubercular infiltrations; it afforded relief to the nervous phenomena, relieved the anæsthesia, and restored health to the body and mind. Reliance seems to have been placed upon its internal administration, for it is stated that "the remedial properties of the oil externally have not been fully tested," and the author refrains from speaking about this question. [This experience is at variance with that of Unna and Brooke, who regard the oil as of no value unless taken in large and continuous doses, which most patients are not able to tolerate.—ED.]

TREATMENT OF LUPUS ERYTHEMATOSUS OF EYELIDS AND FACE.

BROCQ (*British Journal of Dermatology*, 1891) recommends in this disease:

R.—Salicylic acid	.	.	.	.	.	.	3ss
Lactic acid	.	.	.	.	.	.	3ss
Resorcin	.	.	.	.	.	.	gr. xlv
Zinc oxide	.	.	.	.	.	.	3ij
Vaselín	.	.	.	.	.	.	3xvij

The following is also usually well borne:

R.—Salicylic acid	.	.	.	.	.	.	1 part
Pyrogallol	.	.	.	.	.	.	2 parts
Vaselín	.	.	.	.	.	.	20 parts

This is to be rubbed in at night. During the day the first named may be applied, the two being thus used conjointly.

HERPES MENSTRUALIS.

BERGH, of Copenhagen (*Journ. de Mal. Cut. et Syph.*, 1891, No. 6) from his personal experience at the Vestre Hospital during a period of twenty-three

years, concludes that herpes often follows menstruation. In 877 cases of genital herpes, the affection was observed to follow menstruation in 644 cases (73.11 per cent.) and occurring on the labia majora in 80 per cent. The nervous origin of genital herpes is very probable. The herpes is not a deviation of the menstruation, as some authors think; no more is it a result of local irritation due to coitus, without the intervention of the nervous system, as Fournier and Kaposi believe, for relapsing genital herpes appears often upon the face in place of showing itself upon the genital regions. Herpes progeneralis is very commonly observed upon prostitutes.

TREATMENT OF ALOPECIA AREATA, WITH CASES.

P. A. MORROW (*Journal of Cutaneous and Genito-urinary Diseases*, 1891), after an interesting discussion as to the nature of the disease, takes up the subject of treatment. In all cases where there is loss of nerve tone, phosphide of zinc and strychnine, a combination of phosphorous iron and strychnine, or phosphoric acid and strychnine, are relied on. The local treatment which has afforded the best results consists in the following: The hair around the border of each patch is to be clipped closely, permitting a more thorough inspection of the diseased area and facilitating the application of remedies. The hairs around the borders of the patches are depilated where loose. In recent cases chrysarobin, with or without the addition of salicylic acid, in traumaticin or in the form of an ointment, eight to ten per cent. of chrysarobin and two to five of salicylic acid, is prescribed. Applied every few days, a moderate dermatitis is excited and maintained. This treatment is often sufficient to effect a cure. Where the disease is severe and extensive, involving the greater part of the scalp, the entire surface should be treated with acetic acid, mixed with chloroform or ether, the amount of acetic acid being graduated to meet the requirements of the case, ordinarily a strength sufficient to produce the white nitrate of silver tint being employed. The superficial vesiculation is followed by slight exfoliation of the epidermis. Besnier's formula—chloral hydrate 5 grammes, officinal ether 25 grammes, acetic acid (crystals) 1 to 5 grammes—is commended. These applications are repeated two or three times a week at first, and continued at longer intervals during the entire treatment. Between the time of these applications a stimulating oil, as the following, is employed: oil of eucalyptus, oil of turpentine, each half an ounce, crude petroleum one ounce, alcohol one ounce, to be well rubbed in by massage. Once a week or oftener the scalp should be cleaned with tincture of green soap and water. At a later stage of the disease the oil may be replaced by a sulphur and resorcin ointment. Daily douches and frictions with salt and water also favorably influence the growth of the hair.

PSORIASIS A NEUROSIS.

PROF. POLOTEBNOFF, of St. Petersburg (*Monatshefte für prakt. Dermat.*, 1891, Ergänzungsheft I.) expresses the view that this disease is the result of nervous disturbances of various kinds, and hence that it is a neurosis of the skin. The author disputes the usual opinion that patients with psoriasis are gener-

ally otherwise in good health. A large number of cases are recorded in which the skin disease was accompanied by nervous and psychological symptoms, some of which are of such interest and so striking as to be worthy of quotation. The following are selected. Psoriasis when not stated is implied.

CASE I.—Lawyer, aged twenty-four; severe headache, nervousness, great impairment of mental faculties, hysterical attack in witnessing a theatrical performance.

CASE II.—Naval officer, aged twenty-four; intense melancholia; sent South for change of air, when psoriasis healed spontaneously; relapse of skin disease after protracted headaches; hysterical attacks. His whole family of nervous temperament.

CASE III.—Jewess, aged twenty; father an epileptic, mother suffered from megrim; patient hysterical and nervous; psoriasis appeared after intense mental strain on changing her religion to marry a Christian.

CASE IV.—Girl, aged sixteen; grandfather insane; constant vertigo; least excitement causes enuresis; weeps if not given her favorite teacup at the table.

CASE V.—Medical man, aged forty; father had psoriasis; patient considers himself very nervous; sheds tears copiously before strangers when referring to the death of his two children from diphtheria.

CASE VI.—Married woman, aged twenty-seven; hysterical convulsions; hallucinations of hearing and vision.

CASE VII.—Engineer, powerfully built, and in apparently robust health; three relapses of psoriasis; fourth, fifth, and sixth dorsal vertebræ sensitive to touch, slight pressure producing reflex contractions of the muscles of the back and upper extremities; knee reflexes marked; increased temperature on right side; had had measles, scarlatina, typhoid fever, and malaria; psoriasis worst in spring, when he was preparing for his examinations.

CASE VIII.—Boy, aged sixteen; father has nervous debility, brother melancholic; mental abnormalities; aural hallucinations, and simultaneously psoriasis.

A second group of cases is recorded in which diseases of the joints and bones, with and without nervous symptoms, were present with the psoriasis, as in the following:

CASE IX.—Horse-trainer, aged forty-eight, powerfully built; had repeatedly received severe injuries, especially of the head; fingers and toes showed remarkable deformities; eruption coincided with a period of intense nervous excitability, improvement taking place immediately upon his receiving an increase in wages.

The disease is also referred to in connection with certain fevers, as typhus and typhoid, and as a result of alcoholism, as this case will show:

CASE X.—Waiter, aged thirty-three, small stature, hard drinker; had had measles, typhoid fever, and syphilis, and had received an injury to the head. When abstaining from drink is free of psoriasis.

Still another group of cases is presented in which nerve changes are found on special examination. Here there exist vasomotor and functional neuroses, in connection with the head, bloodvessels, temperature, and glands. Weakness of the nervous system is considered by the author to be the main factor

in the production of the disease. Albuminuria seemed to be a cause in three cases, this condition and the eruption disappearing simultaneously.

Where the symptoms are acute the bromides are recommended, and later arsenic, which, as is well known, is attracted to nerve tissue. In this connection reference is made to Skolobusow's investigations in acute and chronic poisoning with arsenic. This observer found in the brain and in medulla thirty times as much of the drug as in the liver and muscles. Lesser's studies gave similar results. Polotebnoff states that the dose should be large, increased to as much as a half-grain or more of arsenious acid daily for a week or two. The usual local remedies are recommended.

VASCULAR TERRITORY OF THE HUMAN SKIN.

SPALTEHOLZ, of Leipzig (*La Semaine Médical*, 1891, No. 47), gives these results of his studies upon injected tissues: 1. The number of afferent branches and their diameter is variable; where pressure is brought to bear they are more numerous and larger. 2. Their length is greater where the skin is very mobile. 3. There exist multiple anastomoses, the arteries of the skin never ending as terminal arteries. 4. The size and the number of the anastomoses are always different, being largest and most numerous where there is increased pressure.

THIOL IN SKIN DISEASES.

BUZZI's (*Charité Annalen*, 1891, Band xv.) experiments in Professor Schweninger's clinic in Berlin lead him to regard thiol as superior to ichthyol. It is valuable in many diseases of the skin, and possesses the following advantages over ichthyol: it is clean and never irritates, whereas ichthyol is impure and often irritates; ichthyol smells disagreeably, thiol does not; ichthyol spots the linen, thiol does not. It moreover has the advantage of costing only one-half as much as ichthyol.

STROPHULUS INFANTUM.

GEBERT (*Archiv für Kinderheilkunde*, 1891, Bd. xiii., Heft 3), with this title considers urticaria papulosa, or the lichen urticatus of older authors, and is of the opinion that hot baths, frequently repeated, act in producing the eruption. As the patients are often anæmic, iron is found useful, and for the itching small doses of antipyrine at night. The body should be sponged with dilute and cold vinegar at bedtime.

ACID NITRATE OF MERCURY AS A CAUSTIC.

HUTCHINSON (*Archives of Surgery*, 1891) speaks highly of this remedy as an application in nearly all unhealthy looking sores, and wherever an infective process seems likely to involve other parts. It is thus useful in boils, lupus, late syphilitic disease of skin or mucous membrane, and in phagedæna. It should be cautiously applied with glass brushes of various sizes, any superfluity being taken up with thick blotting-paper to avoid scar-formation.

ANGIO-KERATOMA.

DR. PRINGLE, of London (*Brit. Journ. of Dermat.*, 1891), with this title describes a rare skin disease, always a sequela of chilblains, occurring in early adult life, characterized by small grouped areas of telangiectases occurring on the hands and feet. Later, the lesions may attain the size of a pea, and become rough, hard, and warty, owing to the thickened epidermis. The disease bears most resemblance to lymphangioma circumscriptum. Electrolysis with the needle proved successful in one case.

OBSTETRICS.

UNDER THE CHARGE OF

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MYOMA OF THE UTERUS COMPLICATING LABOR.

In the *Berliner klinische Wochenschrift*, 1892, No. 6) HUETER, of Marburg, reviews the manner in which myomata of the uterus may complicate labor. He finds that they are a frequent cause of abortion and of profuse uterine hemorrhage during pregnancy, especially when accompanied by placenta prævia. The functions of the bladder and rectum are also much interfered with during pregnancy in patients suffering from myomata. The growth of these tumors is often very rapid during the pregnant state, resulting in interference with the circulation, and œdema of the lower extremities. The position of the uterus is rendered abnormal, so that unfavorable positions of the child, prolapse of the extremities and of the cord are frequently observed. The uterine contractions are rendered abnormal during labor. The expulsion of the foetus is indefinitely prolonged, and foetal death and dangers to the mother constantly arise. When the tumor is so low that it is situated in the pelvis it obstructs labor, and the case resembles one of contracted pelvis. Myomata situated beneath the mucous membrane of the uterus are often dislocated during labor, permitting the escape of the child, and in some instances a spontaneous expulsion of the tumor. In cases complicated by large myomata rupture of the uterus has been observed. The foetus is often subjected to bruising and fractures similar to those observed in contracted pelvis. The stage of placental expulsion is often characterized by such profuse hemorrhage as to endanger the mother's life. The puerperal period in these cases is frequently complicated by septic infection and other abnormalities.

Reviewing a series of 147 cases collected by Süsserott it was observed that 60 per cent. of the labors were terminated instrumentally. A series of 8 cases of pregnancy complicated by myomata were treated by Stratz by instru-

mental measures; none of the mothers died. In 13 cases in which labor terminated spontaneously, 54 per cent. of the mothers perished and 40 per cent. of the children.

The case reported by Hueter was that of a multigravida in her fifth pregnancy at the ninth month. Uterine contractions were very weak, and the early stages of labor lasted for fourteen days. A few days before Hueter's arrival the membranes ruptured, followed by slight persistent hemorrhage from the uterus. On examination, the uterus was the seat of a very large tumor. The child lay upon the left side of the womb, the right portion being occupied by the tumor. It was difficult to introduce the finger into the uterus as the os was nearly filled by a firm mass. The cord had prolapsed and ceased to pulsate. After anæsthetizing the patient, it was possible by gentle manipulation to introduce the hand into the uterus. Version was cautiously performed and a macerated child was delivered. The cord was ruptured during the extraction. The hand introduced within the womb after the birth of the child found a portion of the tumor projecting into the os and cervix. An attempt was made to remove this portion with the hand, which proved successful; other portions then presented, and as no hemorrhage accompanied the manipulation they were successively removed by the hand. A large portion of the tumor was thus delivered, leaving the uterine wall upon the right side very much thinned. The placenta was taken away and the uterus washed out with three per cent. solution of carbolic acid. The patient made an uninterrupted convalescence. The myoma had been submucous, and the remarkable lack of hemorrhage accompanying its removal was explained by the fact that its bloodvessels had become occluded by thrombi during the contractions of the uterus.

TOTAL EXTIRPATION OF THE CANCEROUS UTERUS AT THE END OF PREGNANCY.

An account of an interesting operation for the radical cure of cancer of the uterus during pregnancy is given by MÖLLER in the *Centralblatt für Gynäkologie*, 1892, No. 6. The method pursued was that of the Cæsarean section followed by total extirpation of the uterus as urged by Freund. The patient was aged thirty-five years and a multigravida. Examination revealed cancer of the cervix which had not yet extended to the tissues of the pelvis. She was admitted to the clinic at the beginning of labor. The operation consisted in abdominal section followed by raising the uterus and pulling it strongly forward behind the symphysis pubis. An elastic ligature was then put about the uterus, and the child was extracted through uterine incision. The uterus was then strongly anteflexed and pulled upward, and the tissues were carefully examined to observe how far the cancer had extended. The vagina was cut through three-quarters of an inch below the hard cancerous tissue. The finger was then passed into Douglas's cul-de-sac and the tissues sutured by a curved needle passed from within outward. By pulling the uterus strongly upward the edges were brought well together. A similar procedure was carried out upon the other side. The dissection separating the bladder from the uterus was rendered difficult by the great engorgement of the tissues with blood. The uterus was then removed. It was impossible

to perfectly close the peritoneal cavity, and hence the pelvis was tamponed with iodoform gauze which was brought out through the vagina. The patient reacted well after the operation, and the tampons were removed on the sixth day; on the seventh, a portion of the stitches were taken out; in the evening of the seventh day a loop of intestine was observed to protrude from the upper portion of the wound; after anæsthetizing the patient the intestine was carefully washed with sterilized water, replaced, and the wound freshly brought together.

Thirteen days after the operation all stitches were removed, and on the seventeenth day the patient's temperature was normal. From the seventh day the vagina was douched twice daily with sterilized water. Fragments of necrotic tissue and ligatures came away spontaneously. Four weeks after the operation the patient left her bed. She was soon attacked by influenza, from which she made a tedious recovery. When last examined the abdominal scar was firm and smooth, and no evidence that the cancer was returning could be found. The child survived.

CÆSAREAN SECTION FOR CANCER OF THE CERVIX AND VAGINA.

BOGDANIK reports in the *Centralblatt für Gynäkologie*, 1892, No. 6, the case of a multigravida, aged forty years, who had borne twelve children. The patient was at term, had had pains for twenty-four hours, the membranes had ruptured. Upon examination, carcinoma of the cervix and vagina was found, permitting the entrance of the finger-tip only into the uterus. The foetal heart-sounds were feeble. The patient was immediately anæsthetized, the abdomen opened, and the uterus incised *in situ*, when a dirty yellow fluid escaped. The child was delivered asphyxiated, but soon revived. The uterine cavity and the field of operation were cleansed with 3 per cent. carbolic acid solution and cotton, and the uterus closed with sublimated catgut and continuous suture. Iodoform was freely sprinkled upon the parts and the peritoneum closed with continuous suture of sublimated catgut, the skin and muscle with chromic acid catgut. The wound was dressed with 30 per cent. iodoform gauze, cotton, and binder. The patient recovered speedily from the operation, union occurring by first intention without peritonitis. The mother died, however, shortly after from exhaustion produced by the cancer. The child survived and flourished.

THE PORRO OPERATION, WITH INTRA-PERITONEAL TREATMENT OF THE PEDICLE.

The statement recently made by LIHOTZKY that the Porro operation should be performed for myoma of the uterus complicating pregnancy with the intra-peritoneal treatment of the pedicle finds illustration in a case reported by VON WOERZ, one of the staff of CHROBAK'S clinic in Vienna (*Centralblatt für Gynäkologie*, 1892, No. 5). The patient was a multipara who had suffered from pains in her bones during previous pregnancies. Several of her children had been stillborn. Her last pregnancy was characterized by the same pains, which did not diminish in intensity. The pelvis was found to be contracted, so that Cæsarean section would be required to deliver a

living child at term. She was discharged from the hospital to return at the end of pregnancy for operation.

Abdominal section was made by Chrobak at the beginning of labor. The uterus was brought forward out of the abdominal cavity, incised, and the child readily delivered. The broad ligaments were ligated, an elastic ligature applied, and the uterus amputated. The cervix was then seared with the Paquelin cautery, and the uterine arteries were tied. When the elastic ligature was removed some hemorrhage occurred, which was checked by ligating the individual vessels. The cervix was again seared, when it was found that it had so contracted that a small strip of gauze could be passed through it with great difficulty. It was found almost impossible to check slight hemorrhage from the pedicle until the peritoneum was stitched over the stump. When this was accomplished, the abdominal wound was closed as usual. The iodoform gauze was removed on the fourth day, and on the eighteenth day the patient left her bed. The pains in the bones entirely disappeared after the operation, and the patient made a perfect recovery.

THE POSTURE OF THE PUERPERAL PATIENT.

DUKE (*Medical Press*, 1892, No. 2753) considers the usual custom of keeping the puerperal patient upon her back for a long time after labor to be most injurious. He claims that drainage of the birth-canal is least thorough in this position, and that retro-displacements of the uterus frequently result from this custom. He favors the semi-recumbent position upon the hip or the sitting posture for a few moments after the first twenty-four hours. These positions favor involution and promote the action of the bowels. The best posture to favor the delivery of the placenta is the prone position, and the puerperal patient should assume this posture for a short time daily.

MUTIPLE ARTHRITIS CAUSING PREMATURE LABOR.

The clinical bearing of arthritis during pregnancy is considered by TRACON and BUÉ in the *Archives de Tocologie*, 1892, No. 1. They report two cases as follows: The first was a woman pregnant for the second time, who was subjected to sudden cold followed by pains in the lower extremities, especially in the right knee. She entered a hospital where she was observed to have fever for several days. The pains passed through the lower extremities to the upper, the left shoulder becoming especially involved. On entering the Maternity Hospital her rheumatic affection was most prominent in the thumb of the right hand, which was immovable and very painful to the touch. The right knee was also very painful and partly ankylosed. The patient had an abundant leucorrhœal discharge but otherwise revealed nothing of interest. The induction of labor was determined upon by the method of warm antiseptic douches. Soon after delivery the pains began to grow less, and finally disappeared under treatment by counter-irritation. The child suffered from pain in the left arm, which caused it to immobilize the limb.

A second case was that of a woman aged twenty-seven years. She was taken during pregnancy with inflammation of the right knee, which had been previously immobilized by a surgeon. The arthritis was considered gonor-

rheal in origin. On admission into the hospital the knee was found considerably swollen and in a state of acute inflammation. The joint-pains continuing severe, the induction of labor was proposed and accepted by the patient. A marked improvement followed, which terminated in the patient's recovery.

PÆDIATRICS.

UNDER THE CHARGE OF

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THE TONGUE IN SCARLATINA.

NEUMANN (*Deutsche med. Zeitung*, 1891, No. 63, p. 715) states that in this disease the tongue passes through three stages of change: 1. Tumefaction of the mucous membrane with disturbance of the epithelium; 2. Desquamation; 3. Regeneration of the desquamated epithelium. The appearance of the characteristic "strawberry" tongue is caused, as is well known, by the swelling of the filiform and fungiform papillæ deprived of their epithelium. Of 48 patients examined for this symptom, the "strawberry" tongue was found in 38 (79 per cent.); in 4 the tongue was in one of the three stages mentioned above; while in 6 no modification was observed. Dyspeptic troubles precursory to the disease often so modify the tongue that the mucous membrane shows no new modification under the influence of the exanthem. The "strawberry" tongue was observed to last for one day in 3 cases; two days in 5 cases; three days in 6; four days in 4; and more than four days in the other 20 cases. It appeared during the first three days in 32 per cent. of the cases, and upon the fourth day in 68 per cent. The intensity of the cutaneous eruption seemed to bear no relation to the modifications of the tongue.

LARYNGISMUS STRIDULUS CURED BY FORCED DILATATION OF THE GLOTTIS.

CONSTANTIN PAUL (*Revue mensuelle des Maladies de l'Enfance*, January, 1892) reports the case of a child, fourteen months old, who, for three successive nights, so urgently suffered from laryngismus stridulus that the question of tracheotomy was seriously discussed. As a substitute for this grave remedy, the author suggested forcible dilatation of the glottis, which could be practised with a pair of polypus forceps having a convenient curve. The operation was easily done with the dilator of Laborde, and after this no further paroxysms occurred.

INTUBATION AND TRACHEOTOMY.

PRESCOTT and GOLDTHWAIT (*Boston Medical and Surgical Journal*, 1891, vol. cxxv., No. 27, p. 694) publish a summarized report of 392 cases of intubation and 139 cases of tracheotomy practised at the Boston City Hospital between December 31, 1886, and January 1, 1891. During the first year of this period intubation was done only occasionally and on picked cases, while during 1890 it was practically the only operation, tracheotomy being reserved for exceptional cases or done as a secondary operation. Of the 392 cases of intubation, 80 recovered (20.41 per cent.); 36 cases were followed by tracheotomy, of which 3 recovered; and in 21 cases, in which intubation was attempted, and where either the tube was not inserted or else the child did not breathe after insertion, tracheotomy was immediately performed, these cases being included in the list of tracheotomies. Over 10 per cent. of all the cases were moribund upon admission to the hospital. In the intubation of children, the age seemed to have a decided influence upon the chances of recovery, as has been observed in tracheotomy, the percentage of recovery increasing from 14.63 for children under three years, to 30.9 for children between six and ten years of age.

In the tracheotomy series of 139 cases, 11.5 per cent. recovered, 19 of the fatal cases, however, being moribund at the time of operation. The authors have also compared their results with the statistics collected by various English, German, French, and American writers, and find that, adding their own cases to the total number, the percentage of recoveries after intubation of 2815 cases was 32.2 per cent., while after 23,941 tracheotomies the proportion that recovered was 28.67 per cent. It is interesting to note that 37 of the successful cases of intubation were seen at least a year and a half after recovery, and all had perfect voice, and nothing that would indicate any ulceration from pressure of the tube. In two intubated cases, children of fifteen and thirteen months respectively, the tube slipped into the trachea—in the first case spontaneously, in the second during or after unsuccessful efforts at removal. Both cases succumbed after tracheotomy, although in the first case the tube was by this means discovered, and with difficulty removed.

CONGENITAL STENOSIS AND ATRESIA OF THE PULMONARY ARTERY.

VON ETLINGER (*St. Petersburger medicinische Wochenschrift*, 1891, N. F. viii., No. 32, p. 371) accepts the classification of these congenital anomalies, as given by Rauchfuss and Rokitsky, in the three following groups: 1, stenosis or atresia of the pulmonary artery, with closure of the interventricular septum; 2, stenosis or atresia, with defect of the septum; and 3, complicated stenosis or atresia of the pulmonary artery, with defect of the septum. Clinically considered, the symptoms of all three groups are very similar: 1. Cyanosis (especially in case of closure of the interventricular septum) of the skin and mucous membrane, greatly increased by crying, observed at birth or immediately after. 2. Increase of cardiac dulness to the right, as a result of hypertrophy and dilatation of the right chambers. 3. A systolic murmur along the course of the pulmonary artery (sternum and adjacent part of the second left intercostal space). Cases have been

reported, however, in which, in the presence of a stenosis of the orifice of the pulmonary artery, complicated with defect of the interventricular septum, no abnormal heart-sounds could be detected. Sometimes, beside this murmur, the normal pulmonary sounds can be heard, often quite distinctly marked. Again, the murmur may be audible over the whole chest, and even in the interscapular region posteriorly, and may be so loud as to drown the normal heart-sounds. This murmur may also be caused by a defect of the interventricular septum, with persistence of the ductus arteriosus. Other less constant symptoms are weakness and languor of voluntary movements; coldness of the body, especially the extremities, after slight exposure; and from time to time attacks of dyspnœa, attended by increase of the cyanosis, and by Cheyne-Stokes respiration, or by convulsions. These attacks may end fatally. Children with the above-described symptoms sometimes survive and even reach a comparatively advanced age, as a result of compensation of the stenosis by hypertrophy of the right chambers. In this event they suffer from dyspnœa, fainting spells, palpitation, somnolence, or epileptiform convulsions. Later on, hypertrophy of the liver and disposition to hemorrhages from the nose, gums, and respiratory organs are observed; and the child begins to show stunting in both his physical and mental growth. Rarely, however, such children may enjoy a relative healthfulness.

Subjects of congenital atresia of the pulmonary artery die very early, usually in the first days or weeks of life. In only one recorded case has the life-period lasted as long as nine months. Subjects of congenital stenosis, on the other hand, sometimes reach a more advanced age, instances of twenty, thirty, and even forty years of life being on record. Cases of original stenosis may, by repeated attacks of endocarditis of the conus or of the pulmonary orifice, be transformed into cases of atresia, with consequent increased gravity of prognosis. Such subjects, in later years, not infrequently die of pulmonary complications, like pneumonia, caseous peri-bronchitis, or miliary tuberculosis.

Diagnosis is not always easy. The finer differential diagnosis between stenosis and atresia, and whether this be simple or complicated with other anomalies of structure (defect of the ventricular septum and persistence of the ductus arteriosus), is almost impossible. Most readily may this anomaly be confounded with congenital abnormality of the tricuspid orifice (stenosis or insufficiency), or with transposition of the great vessels, which latter is attended with cyanosis, and, as a result of its not infrequent complication with other anomalies, may be accompanied by murmurs whose localization is practically impossible.

THE TREATMENT OF EMPYEMA IN CHILDREN.

EDOUARD MARTIN (*Revue Médicale de la Suisse Romande*, 1892, No. 1, p. 46) gives the clinical histories of eight cases of purulent pleurisy treated in various ways. Two cases were cured after a single aspiration; one by spontaneous opening, followed by antiseptic incision; and five by antiseptic pleurotomies. In the five pleurotomies cure was rapid, the duration of the period of recovery—*i. e.*, until the adhesion of the pleural surfaces—lasting in no case longer than six weeks. Scarcely any deformity of the chest-walls

occurred, the abscess cavity rapidly diminishing, and the lung expanding within a few days after incision. In conclusion, the author advises that in recent cases simple puncture with the aspirator of Potain should always be tried as the first operative intervention. If this mode of treatment is not sufficient—if the pus is not thoroughly evacuated by the trocar, if the general condition of the child continues to grow worse, and fever persists—then incision should not be delayed. The fifth intercostal space should be chosen for the incision, and a good-sized drain inserted, with an antiseptic dressing to be changed daily. The siphon, because of the difficulty of its application in young children, of the necessity of immobilizing the patient, and the constant watchfulness entailed upon the attendants, should be reserved for cases of chronic pleurisy. Despite the opinion of Schede, Ziemssen, and others, resection of the rib should be reserved, the author thinks, for exceptional cases.

CHRONIC PERITONITIS IN CHILDHOOD.

HENOCH (*Deutsche medicinische Wochenschrift*, 1892, No. 1, p. 1) contributes a timely paper under this title. According to his researches, as early as 1838 Wolff published a study on chronic peritonitis, and stated this to be an exceedingly common affection in children, of which he had in a period of six years observed more than a hundred cases. The chief symptom described by him was a copious abdominal effusion. It is, however, very likely, from more modern observations, that a large proportion of these cases were incorrectly diagnosticated, which is the more probable from the fact that all were reported cured. From that time until the appearance of Galvagni's work, in 1869, the subject seemed to have been forgotten. Soon after this, however, the increasing activity in abdominal surgery very rapidly multiplied the number of recorded cases, while at the same time the opinion gained general credence that all such cases were of a tubercular origin. As late even as 1884, West, in his treatise on diseases of children, stated that chronic peritonitis was almost without exception tubercular. This view, however, has been considerably modified by the more recent studies of Baginsky, Vierordt, and others, and it is now accepted that the peritoneum, just as well as the pleura, may be the seat of a simple chronic inflammation with serous exudation.

This simple form, which excludes all intra-peritoneal suppurations, is characterized by a slow evolution, absence of spontaneous pain, or of tenderness to pressure: the only symptom is a free or encysted ascites. The etiology is most often very obscure; rarely a history of traumatism may be elicited. In a second group of cases a preceding exanthem may be the apparent etiological factor, as seemed to be likely in two cases—one observed by Fiedler and the other by Henoch—occurring after measles. The complete cure after several tapplings, in the author's case, left no doubt of the true character of the disease. The point of greatest value in diagnosis is the general state of the patient. In the simple form, the general nutrition and well-being of the child suffers but little; while, on the contrary, in the tubercular variety, the emaciation is striking. Search for bacilli in the effusion, even in tubercular cases, is often disappointing, and therefore a negative finding does not exclude the more serious disease.

Most of the patients are females—a fact that suggests a possible connection in many cases between the peritoneal inflammation and a vulvo-vaginitis, which is by no means uncommon in little girls. In the differential diagnosis one must consider the possibility of cirrhosis of the liver, which in both the hypertrophic and the atrophic form is not unknown in the child. Autopsies upon cases of tubercular peritonitis quite often show an accompanying interstitial hepatitis, probably explainable by a direct extension of the inflammation along Glisson's capsule to the parenchyma of the organ. On the other hand, the peritoneal inflammation might be secondary to the hepatic disease.

In the way of treatment, internal medication has no appreciable effect. Simple puncture is more successful, and, moreover, a cure may spontaneously take place. Surgeons have profited from these facts to attribute cures of tubercular peritonitis to laparotomy. König has reported 130 successful cases (7 in children between seven and ten years of age), and Alexandroff, 20 cases between two and fifteen years—all said to be tubercular. The author regards these cases with considerable doubt, for the good reason that none of them have been followed long enough, and because he believes that many false diagnoses have been made, cases of the simple peritonitis above described having been mistaken for the tubercular variety. He details a case that came under his care, which was submitted to laparotomy as a tubercular case. The peritoneum was found studded with small nodosities; but microscopic examination proved them to be of purely fibrous structure, and no tubercles, bacilli, or giant-cells were found. The child was cured, and still continues in good health. He therefore believes that many like cases have been set down in the category of tubercular peritonitis cured by laparotomy.

THE SUBCUTANEOUS INJECTION OF SALT SOLUTION IN THE GASTRO-ENTERITIS OF INFANTS.

DEMIÉVILLE (*Revue Médicale de la Suisse Romande*, 1892, No. 1, p. 54) records a case of grave gastro-enteritis in an infant of four and a half months, in which, as a last resort when the child was in collapse, he practised the injection of four or five ounces of a solution of sodium chloride beneath the skin of the thighs. The success of this treatment was striking: no further vomiting or diarrhœa occurred, and the case pursued a rapid course to complete recovery. The mode of action of the injected fluid is capable of various explanations.

Whatever may be considered the essential cause of death in these cases, the sudden introduction of a considerable quantity of fluid into the organism either must act mechanically upon the walls of the vessels and improve the general circulation, or must directly stimulate the cardiac nerves. In either case, the central nervous system receives a more or less powerful impulse which enables it to overcome the depressing influences of disease, and to stimulate the glandular organs to reassume their functions.

The technique of the operation is exceedingly simple, and needs no complicated appliances. An irrigator or any extemporaneous substitute, to which a new rubber tube may be attached, will do admirably. All the parts must be sterilized by boiling or by a careful lavage with sublimate solution (1 per cent.), and subsequent rinsing with boiled water. The Dieulafoy needle or a

trocar like Potain's completes the apparatus. A litre of a 6 per cent. sterilized salt solution is prepared, somewhat warmer than required, in order to make up for loss of heat while passing through the apparatus (say 42° to 45° C.), and the injection is made slowly under a pressure gained by an elevation of four to five feet.

The author believes that subcutaneous injections of salt solution will be found of inestimable value in many cases of extreme depression in the acute diseases of children, where the organism only needs to be tided over a few days until its own reparative forces can again assert their supremacy. In the exhaustion attendant upon severe diphtheria, he thinks that life might often be saved by recourse to this method of treatment.

THE TEMPERATURE IN ACUTE PRIMARY PNEUMONIA OF CHILDREN.

As the result of a study of this subject, HOLT (*Archives of Pædiatrics*, 1891, No. 12) makes the following summary :

1. The predominating type of temperature in acute primary broncho-pneumonia is high and remittent, the daily fluctuations amounting usually to from three to five degrees Fahr. The sustained high temperature is uncommon except in the rapidly fatal cases. A low range of temperature—only two or three degrees above the normal—is not very uncommon, but is more frequent in fatal cases.

2. The termination of the fever is almost invariably by lysis.

3. The lowest mortality is among cases in which the fever lasts from eight to fourteen days; the highest is among those lasting but two or three days; and next to these the protracted cases, lasting over four weeks.

4. The day of highest temperature in fatal cases is usually the last day; in recovery cases there is no rule in this respect.

5. The lowest mortality is seen in the cases in which the highest point reached was between 103° and 104.5° F. Above 105° the mortality rises with the increase of each degree in the temperature. Abnormally low temperatures are also to be dreaded, since they usually indicate a constitutional condition which makes recovery very doubtful.

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MALIGNANT DISEASE OF THE TONSILS, WITH TEN
ILLUSTRATIVE CASES; THE STATISTICS AND THE
BIBLIOGRAPHY OF THE SUBJECT.

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THE larger works on general surgery, and even the more recently published books which are devoted by their authors to the special consideration of diseases of the throat, fail to mention, or devote only a limited space to, malignant disease of the tonsils. This circumstance demonstrates one of two facts: either the disease rarely attacks the tonsils, or, until recently, observers have failed to record the cases brought under their notice. That the latter rather than the former is the case is shown by the bibliography appended to this paper, and by the fact that within my own experience I have been called upon to treat ten cases.

The want of attention bestowed upon the subject of this paper is shown by the very brief reference given to malignant disease of the tonsils in one of the best books on diseases of the throat of its time. Sir Morell Mackenzie, in the edition of his book¹ published in 1880, says:

This is a rare disease, but cases have been reported by Velpeau, Maisonneuve, Lobstein, Lennox Brown, etc. Most of the reported instances belonged to the encephaloid variety, the disease being in some cases primary, and in others due to extension from adjacent parts. I have met with seven cases of cancer of the tonsils, five of which were encephaloid and two scirrhous.

¹ Diseases of the Throat and Nose, vol. i. p. 83.

The statement that malignant disease of the tonsil is rare—a statement which is very generally accepted—seemed to me not to be quite true when I discovered that within seven years I had met with ten cases. It then became evident that the subject was one of much higher importance than is generally admitted. So long as the belief exists that the tonsils are seldom attacked by malignant disease, there is a great liability to the serious nature of the malady being overlooked by general practitioners during its early stage, and mistaken for some acute or subacute inflammatory affection of the gland, or a syphilitic new-formation.

Ten years ago it was with great difficulty that even a few well-authenticated cases could be collected. For example, Mr. Butlin, in his valuable work on *Sarcoma and Carcinoma*, published in 1882, collected nine cases of sarcomatous and three of carcinomatous disease of the tonsil. But since that time observers appear to have been more careful in recording their cases, and by the publication of such admirable compilations as Dr. Semon's "Journal" a research into the literature of the many diseases attacking the upper air-passages has been rendered comparatively easy.

Malignant disease of the tonsil is so fraught with danger, and its consequences are so serious, that it should be the endeavor of all who have any experience to investigate, as far as they can, the means of diagnosing the disease as early as possible, and add what they can to the methods we possess of alleviating suffering, and, if possible, of saving life.

In carcinomatous disease of the tonsil, as in extrinsic cancer of the larynx, or in epithelioma at the base of the tongue, the lymphatic glands become rapidly involved, whereas in some of the sarcomata, especially in the spindle-celled variety, the tumor may remain encapsuled for a considerable period, and the glands continue unaffected. I shall therefore consider these two forms of malignant disease separately, as far as is consistent with a proper study of the whole subject.

Sarcomatous disease is met with in the tonsils in various forms, but by far the most common variety is the round-celled sarcoma, or lympho-sarcoma, a most virulent disease, and one in which secondary formations rapidly develop. It is a malady in which, even from the onset, little hope can be entertained of saving the patient. Of the fifty-two cases which I have collected nine were stated to be round-celled sarcoma, and eighteen were named lympho-sarcoma; twenty-three of the cases were published as specimens of "sarcoma," the exact variety not being mentioned. One example published by Scheurlen was described as a fibro-sarcoma and another by Gray as an adeno-sarcoma.

¹ Internationales Centralblatt für Laryngologie, Rhinologie, und verwandte Wissenschaften, Berlin.

The following very interesting case illustrates in one individual the points of contrast in the life history of the spindle-celled and the round-celled sarcomata.

CASE I. *Encapsuled spindle-celled sarcoma of left tonsil; slow growth; lymphatic glands not involved; operation through the mouth; no local recurrence five years after operation; second sarcoma formed in right tonsil; rapid involvement of lymphatic glands, palate and pharynx; death from hemorrhage and exhaustion five years and three months after onset of disease in left tonsil.*—Mrs. B., a lady aged fifty-seven years, who always enjoyed good health, and looked much younger than her years, consulted me in November, 1884, regarding a swelling in her left tonsil, which her private medical attendant looked upon as a subacute tonsillitis. He had been employing the usual remedies, but without any good effect; the tonsil continued to increase in size and in hardness, and caused the patient some alarm, but no pain, or even discomfort except by reason of its bulk. I found the left tonsil enlarged, hard, smooth, and freely movable. There was no involvement of the lymphatic glands. She said that she observed the swelling for the first time at the beginning of July, 1884, but paid very little attention to it on account of the freedom from pain. The tonsil increased in size very slowly at first, but during the first fortnight of November its growth has been more rapid. The appearance of the tonsil and the history of the case led me at first to suppose that I had to deal with a chronic interstitial tonsillitis, but by the beginning of December I was convinced that the disease was of a malignant nature, and accordingly determined to operate at once, as the tumor appeared to me to be a favorable one for removal, the lymphatic glands being still free from the disease. Having previously performed tracheotomy, on the 5th of January, 1885, I made an incision through the anterior pillar of the fauces with a knife, and soon came upon a dense fibrous capsule. I then tried to enucleate the tumor with the finger and blunt instruments, but in attempting to do so the capsule ruptured, and the growth became completely broken up. I then cleared out the whole tumor mass with a Volkmann's spoon and subsequently separated the capsule from its surroundings. The opening thus left was dusted with iodoform, and the following day, when bleeding had ceased, the patient was again placed under chloroform, and the whole of the surface from which the tumor was removed was very freely cauterized with a Paquelin's knife. The wound healed quickly, and the patient made such a good recovery that she was able to leave, with her daughter, for the south of France in the second week of February.

Microscopic sections of fragments of the tumor showed it to be a round- and spindle-celled sarcoma. Portions taken from the centre of the growth were composed of moderately large, round nucleated cells, closely aggregated, bound together by an almost homogeneous material, and a very delicate reticulum of what appeared like connective-tissue fibres, but which probably were the walls of blood channels. The peripheral parts of the tumor were formed almost entirely of spindle-cells closely packed together, and presented the typical structure of sarcomatous tissue.

Until the beginning of April, 1889 (four years and nine months after the formation of the sarcoma in the left tonsil, and four years and three months after its removal by operation), the patient enjoyed perfect health,

but about the middle of that month, while residing in Egypt, she felt some discomfort in swallowing, and had a strong inclination to refuse food. This she thought little of, as she had been travelling and the weather had been usually cold, but when, at the end of a fortnight, she found that her throat was getting rapidly worse rather than better, arrangements were made to return home. (Mrs. B. knew the nature of the tumor removed from her left tonsil.) In passing through Paris she consulted, if I remember correctly, M. Ch. Fauvel, who was inclined to take a very serious view of her case, although he did not express a definite opinion regarding the exact nature of her illness.

The patient asked me to see her, which I did on the 14th of May, and then I noticed a great change for the worse since I had met her in September of the previous year. Now her voice and articulation were indistinct, the sense of taste was impaired, there was a continuous and copious discharge of saliva, which she found a difficulty in swallowing while awake, and during sleep it escaped from her mouth in large quantities, soiling the pillows and bed-clothes. Deglutition was not only difficult but painful, and occasionally fluid food escaped into the nostrils. There was no obstruction to nasal respiration, but the sense of smell was imperfect. Notwithstanding, the patient complained greatly of the odor of her breath. On looking at the neck, a general diffuse swelling was noticed on the right side, and by palpation the growth could not be easily limited. This swelling she said had appeared within the last ten days and was very rapidly becoming worse. An examination of the throat revealed the presence of a large swelling in the region of the right tonsil, and, on palpating with the finger in the mouth, the tumor in the tonsil was found to be continuous with the swelling in the neck. The whole mass was soft and almost fluctuant, its limits could not be clearly made out; the mucous membrane of the soft palate, and the right anterior pillars were deeply injected and much swollen, but there was no ulceration.

June 17, 1889. Since last note was made I have seen the patient every third or fourth day, and during that time the progress of the disease has been very rapid. Now ulceration of the tumor has occurred in the mouth, and, as a consequence, the breath is very fetid, the swallowing of solids has become almost impossible, and she has had to subsist almost entirely on fluid and semi-fluid food. The sense of taste is now entirely gone; also, she has been complaining very much of pain in the right ear, and occasionally small quantities of blood have escaped with the discharges from the mouth, which are now very copious and fetid.

It is not necessary to follow in detail the sad history of this very distressing case, further than to say that the sarcoma in the right tonsil grew rapidly during the summer months of 1889, and gave rise to copious and often-repeated hemorrhages, which greatly reduced the patient's strength. She died of exhaustion, following a hemorrhage, on the 8th of October, 1889—that is to say, five years and three months after the onset of the disease in the left tonsil, which structure was unaffected by the second attack. Therefore, as far as the excision of the left tonsil was concerned, the operation effected a complete cure.

Another case of sarcomatous disease, which came under my notice in 1886, illustrates in a typical form the history and appearance of the tonsil in lympho-sarcoma.

CASE II. *Lympho-sarcoma of the right tonsil, following acute inflammation with suppuration; rapid extension of disease to palate, pharynx, tongue, and lymphatic glands; no operation; death in five months from hemorrhage and exhaustion.*—The patient, J. McM., aged fifty-four years, a merchant, who, when first examined by me, stated that he had been suffering from “a sore-throat” for the last fifteen weeks. The disease commenced with an attack of what was believed by his doctor to be an acute tonsillitis, which, as he at first thought, ended in suppuration. An abscess certainly formed in the tonsil and burst, after which the patient experienced considerable relief. About a month after the first onset of his illness he became aware of the presence of “a lump in his throat,” but, on account of the previous inflammatory attack, neither the patient nor his medical attendant attached much importance to the presence of the swelling in the right tonsil until the tumor began to ulcerate. Then the doctor suspected the disease to be specific, and treated it accordingly, although there was no history of the man having contracted syphilis, nor were there any secondary manifestations. When I examined the patient for the first time the following conditions were observed: The soft palate was deeply congested and oedematous; the uvula elongated and pressed to the left side by a smooth, soft, globular, livid mass, the anterior aspect of which was apparently covered by mucous membrane, while its inner and posterior surface was occupied by a fungating ulcer covered by a yellowish-gray slough. The tumor was about the size of a golf ball, and was not limited to the right tonsil, but invaded the anterior pillar, part of the soft palate and numerous lymphatic glands.

I was quite satisfied that I was dealing with a soft, rapidly growing sarcoma; but to make the diagnosis certain, I removed a portion of the tumor for microscopic examination, which, unfortunately, proved my suspicions to be correct. No operation was performed; the tumor spread rapidly to the tongue, palate, and pharynx; and the patient died from hemorrhage and exhaustion about five months after the first symptoms were complained of.

These two are the only examples of sarcomatous disease which I have seen, but the following cases of cancer of the tonsil are interesting:

CASE III. *Syphilitic gumma of the right tonsil, extending to the soft palate and wall of the pharynx, with early involvement of the lymphatic glands; slowly amenable to treatment, and followed by development of a carcinoma.*—W. S., a laborer, aged forty-one years, was first seen by me at the Royal Infirmary about the end of January, 1890, when he stated that about nine months ago he first noticed that he had a little difficulty in swallowing, and on looking at his throat he observed that there was a slight swelling on the right side of the throat, but he did not detect any enlarged glands in the neck until November, 1889. When he came to the out-door department, he complained of great difficulty in swallowing, and considerable pain, especially at night. His breath had an extremely fetid odor, and on inquiring into the history of the case I found clear evidence of the man having contracted syphilis six years

previous to the throat affection setting in. On examination, a large gray and red fungating mass was seen occupying the situation of the right tonsil, and extending forward and upward along the anterior pillar to the soft palate. The tumor was very soft and friable, and large parts of it were in a sloughing condition. On examining the neck, several greatly enlarged glands were found. These were hard, firmly fixed, and seemed to be continuous with the tumor in the mouth. In the mouth there was a large quantity of muco-purulent material tinged with blood, but on questioning the patient he informed me that he never had any severe hemorrhages from the growth. He was weak, emaciated, and very anxious regarding his condition. I therefore recommended him to come into the ward, but this he failed to do, and preferred to be treated as an out-patient until the 24th of April, 1890. By this time the tumor had only slightly increased in size, but during the interval considerable portions had sloughed away, some of the pieces being as large as a walnut. Now the tumor was about the size of a goose's egg, and the greater part of it bulged into the mouth and pharynx, and during sleep it caused considerable difficulty in breathing. His voice and articulation were markedly nasal, and there was considerable obstruction in the right nostril. Swallowing was difficult and painful, so that his food required to be almost entirely fluid. The sense of taste was impaired, and generally at night he suffered from severe pain in the right ear.

When the patient was admitted into the ward I examined him repeatedly, and he was also seen by my assistant, D. D. McKellar Dewar. From the appearance of the growth, taken together with the history of the patient, we had considerable doubt as to the nature of the disease. The circumstances (1) that there was clear evidence of the man having contracted syphilis a few years before, (2) that the progress of the disease was slow, (3) that hemorrhage was absent, and (4) that there was a tendency in portions of the growth to separate by sloughing, disposed me to regard the new formation as syphilitic; whereas, on the other hand, (1) the marked dysphagia and severe pain radiating from the throat to the ear, (2) the marked involvement of the lymphatic glands, (3) the emaciation and anæmia, which were altogether out of proportion to the diminution of the quantity of food taken, led me to suspect the disease to be malignant. At first the patient was treated by giving him green iodide of mercury and extract of opium in pills, while the mouth was sprayed with a solution of perchloride of mercury after the use of an alkaline gargle. This course of treatment was followed by the administration of iodide of potassium in the usual way; but when the patient left the ward at his own request on the 30th of May, it was noted: "Since admission the growth has remained practically the same size, even although large portions have separated spontaneously or in sloughs. Under treatment by iodide of potassium the tumor ceased to grow rapidly, but it cannot be said that there was any actual diminution in its bulk." Portions of the growth which came away spontaneously or were removed by forceps presented the microscopic characters of a gumma. Therefore, when the patient was dismissed, he was directed to continue the anti-syphilitic treatment, and to come to the out-door department regularly, which he did. During the summer of 1890 the condition of the throat improved very much, and for some time I had a hope that a cure might be effected. The slow response to treatment, however, rendered the diagnosis doubtful.

During the autumn of 1890 the patient was seen occasionally at the out-door department, and until November of that year he considerably improved; but even at the best there was a marked swelling on the right side of the neck, and very distinct enlargement of the right tonsil with ulceration of its surface. From the beginning of November till the 13th of February, 1891, the patient was not seen, and when he returned his condition appeared to be so much worse, that I recommended him to come again into the ward. The ulcerated area was now greatly increased in size, but the tendency of portions of the tumor to separate by sloughing was not so marked as formerly. The patient now complained of great difficulty in swallowing, and he suffered very much from pain at all times. The growth seemed to be harder than in November, 1890, and the lymphatic glands were involved to a greater extent. In order to relieve the dysphagia a large portion of the tumor was removed and subsequently submitted to microscopic inspection, when it was found at some parts, but not at all, to present the characters of an acute carcinoma. The patient was kept in the ward for a month; during that time no improvement took place. On account of the malignant character and the extent to which the disease had spread, no radical operation could be advised; the patient was therefore dismissed, palliative treatment being prescribed.

CASE IV. *Primary epithelioma of the right tonsil; rapid and extensive involvement of lymphatic glands; no operation.*—H. W., an engineer, aged forty years, came to the out-door department of the Royal Infirmary for the first time at the beginning of October, 1890. The patient was unable to say when he began to be troubled with his throat, but he was certain that in the previous July it was quite well. What he complained of most was pain in the right ear, and at the angle of the lower jaw on the same side; he also experienced considerable difficulty in opening his mouth, and thought "that his jaw was becoming fixed," which he considered to be due to a hard swelling under the jaw. This swelling, he said, had been growing very rapidly of late, while at the same time the pain had become more intense, and was always worst at night. When examined by me for the first time, on palpating the right side of the neck, I found a large, diffuse, irregular, and firmly fixed tumor immediately below the angle of the lower jaw, and on passing the finger into the mouth, the tumor in the neck was found to be continuous with a growth in the right tonsil. The whole mass was as large as half a cricket ball. On further questioning the patient, the fact was clearly made out that the enlargement of the tonsil occurred fully two months before he noticed any swelling in the neck. Indeed, the involvement of the lymphatic glands was apparent to the patient for the first time at the beginning of September. On examining the mouth a large and not very well defined tumor was found to occupy the place of the right tonsil. The great bulk of the tumor was covered by congested, but otherwise uninjured, mucous membrane; and at its anterior part, corresponding to the situation of the anterior pillar, there was a deep, irregular excavated ulcer, covered by a grayish slough. There was no history of syphilis. From the history of the case and the appearance of the tumor I was satisfied that the tumor was an epithelioma. The patient was therefore advised to come into the ward, in order that a more complete examination might be made, and, if considered advisable, an operation be performed. On admission to the ward a small

part of the tumor was removed for microscopic examination, when it was proved to be an epithelioma; but considering the wide area involved in the tumor, its very rapid growth, and the weak and anæmic condition of the patient, I did not consider it my duty to do more than fully state the whole circumstances of the case to the man himself, and he, I think wisely, determined not to have an operation performed. In this case I felt that the immediate dangers of the operation were very considerable, while the prospects of prolonging life or alleviating suffering were not great.

CASE V. *Epithelioma of the left tonsil; rapid growth and speedy involvement of lymphatic glands; dysphagia, severe pain, anæmia, and death from exhaustion three months after onset of disease.*—Mrs. B., housewife, aged forty-seven years, was admitted to the Glasgow Royal Infirmary on the 23d of December, 1889, in an extremely weak and emaciated condition. So reduced was her strength that I found some difficulty in procuring a history of her illness. From what she told us it appeared that only three months previously had she noticed anything wrong with her throat, and for a fortnight this only amounted to a difficulty in swallowing; but soon afterward pain, at first slight, but subsequently severe, troubled her, especially at night. The pain extended from the larynx to the left ear, was always present more or less, but as a rule was not so bad in the morning. Beyond the pain, dysphagia, and general weakness, she complained of nothing. On examining the throat a large epithelioma was found, involving the left tonsil and extending downward to the epiglottis and leading to secondary formations in the cervical lymphatic glands. Those at the angle of the jaw were incorporated in the tumor, and altogether formed a mass the size of a large apple. Viewed from within the mouth the tumor was seen as a large fungating and sloughing growth, the surface of which was covered by a muco-purulent and extremely fetid discharge. On palpation it was found to be hard, firm, and nodulated; and on microscopic section it presented the character of an epithelioma. At the level of the cricoid cartilage there was a small gland, which was hard, but not fixed to the skin, nor to the underlying structures, over which it moved freely. Cancerous cachexia was well marked, the pulse very weak and small. The patient died from exhaustion six days after admission.

CASE VI. *Epithelioma of right tonsil, spreading to soft palate within six weeks, and to gland within eight weeks; favorable for operation within first three months, but refused by patient; death from hemorrhage and exhaustion six months after onset of disease.*—D. McW., aged sixty-one years, a shoemaker, a man of intemperate habits, but who enjoyed unvarying good health until three months previous to admission to the Glasgow Royal Infirmary, on the 27th of June, 1888. About the beginning of April of that year he first experienced some discomfort in swallowing, and when he looked at his throat in a mirror he noticed a swelling of the right tonsil, but considering it to be of no importance, he did not seek medical advice until the 15th of June, 1888, when he consulted me. He then gave the following history of his illness: At the end of the first week of April he thought that a bone had stuck in his right tonsil, and, trying to remove it with his finger-nail, he caused some bleeding, but did not succeed in finding a bone. At this time the tonsil was not much enlarged, but during April and May considerable increase in its bulk occurred, so that by the end of the latter month it was "the size of a

large walnut," according to the patient's statement, and the tumor had begun to grow over the soft palate. On the 17th of May there was a moderately profuse hemorrhage (twelve ounces) from the tumor, and from that date until the 15th of June bleeding occurred almost daily, but was seldom more than two or three ounces at a time. Pain also set in about the beginning of May, and increased in severity and duration along with the enlargement of the tumor. On the 5th of June the patient noticed for the first time a distinct and separate swelling at the angle of the lower jaw, and he said that as this swelling increased, the pain in the throat and ear diminished in severity. When examined by me at his own home I found him pale, but not emaciated. A man of 5 feet 9 inches, he weighed 10 stones, 11 pounds, but when in perfect health his weight was 11 stones, 12 pounds. Considering his condition, his general health appeared good. The voice was nasal in quality, but there was little or no impediment to breathing by the mouth, although the mobility of the tongue was impaired by the enlarged tonsil. On examining the throat an ulcer about the size of a penny, round in form, and with everted edges, was found to occupy the upper portion of the right tonsil and the neighboring part of the soft palate. The ulcer was about equally distributed on each of these parts. The surface of the ulcer and its edges presented a fungating appearance, while the surrounding mucous membrane was hyperæmic and œdematous, and covered from time to time by a very fetid muco-purulent discharge. At no time were sloughs seen to separate, nor did the patient admit having had syphilis, but considering the life he led, his statements on this point could not be thoroughly depended upon. While removing a portion of the tumor for microscopic examination, I at the same time placed the patient on an anti-syphilitic treatment, but without any benefit being derived from it. The portion of growth removed on the first occasion showed nothing more than an aggregation of recently formed inflammatory connective tissue. After the patient had been admitted to the Royal Infirmary, namely, on the 29th of June, another specimen was taken away with cutting forceps, and on examination it presented the structure of an epithelioma.

Considering all the circumstances of the case, the general good health of the patient, the absence of emaciation and cachexia, the comparatively small size of the tumor, and the slight involvement of the lymphatic glands, I felt it right to recommend the patient to have an operation performed. This he at once consented to, but his relatives, on learning what was to be done, persuaded him to leave the hospital, and I have seen no more of him. I was informed, however, that he died about the end of September from hemorrhage and exhaustion.

CASE VII. *Epithelioma of tonsil and soft palate in a patient who suffered years previously from syphilitic ulceration of throat; moderately rapid advancement of tumor, and early involvement of lymphatic glands; no operation.*—C. D., aged sixty years, dock laborer, was admitted into the Glasgow Royal Infirmary on the 26th of September, 1889, complaining of difficulty in swallowing, and obstruction to the left nostril. He said that both his throat and nose troubled him very much, but that the "first thing that put him about" was the feeling as if "something

had stuck in his throat." He said that he felt as if "a boy's marble was fixed at the back of his tongue," on the left side. There was also a feeling of "stiffness" on the left side of the throat, but soon afterward he experienced pain in the left ear and down the neck as far as the sternum. At this time (May, 1889) there was no difficulty in swallowing, but he suffered very much from a continual discharge of saliva and mucus from the mouth. He began to experience pain of a severe character only two months previous to admission. It was not limited to the throat but extended to the left ear and to the left side of the thorax; he, however, believed the pain in the latter situation to be due to an injury he received some months previously. On admission the patient was feeble, and there was very marked anæmia. Examination of the throat showed the soft palate to be marked by an old and deep cicatrix, and on the posterior wall of the pharynx there were marked contractions due to healed syphilitic ulcerations. In the left tonsil, and on the neighboring part of the soft palate; there was a deep ulcer with a small sinus, which passes into but not through the soft palate. There was great enlargement of the tonsil, and marked thickening of the soft palate; the mucous membrane was hyperæmic and the whole of the throat was covered by a white, very fetid, muco-purulent discharge. There was marked enlargement of the lymphatic glands in the neck. The history of the case and the presence of old syphilitic cicatrices led me to suspect the disease of the tonsil to be also syphilitic, but the appearance of the tumor resembled epithelioma so strongly that I removed portions of it for microscopic examination, when it was shown to be an epithelioma. Previous to admission the patient was treated for syphilis without any improvement taking place. The case was not a suitable one for operation.

CASE VIII. *Epithelioma of left tonsil and left posterior pillar and uvula; no involvement of lymphatic glands; early diagnosis; complete removal by operation; no recurrence nineteen months after operation.*—Mr. A., aged sixty-five years, a farmer from Wigtonshire, consulted me in June, 1890, when he told me that for the last four weeks he had been suffering from a swelling in his throat, and pain in the left ear. I had seen him two years before on account of a simple but somewhat chronic attack of tonsillitis, from which he had completely recovered. On examining the tumor in the throat I found it to involve the upper part of the left tonsil, where it originated, as well as the posterior pillar and the left side of the uvula. From the appearance of the growth I at once concluded that it was an epithelioma, but to make the diagnosis certain I immediately removed a portion for microscopic examination, and the day following I completely excised the tumor, and with it a good part of the healthy tissue surrounding. I shall refer to the method of operating further on. The patient made a good recovery, and no recurrence has taken place till the present (January, 1892).

CASE IX. *Epithelioma of right tonsil of small size; operation advised but refused by patient; slow extension of tumor to gum and glands; severe hemorrhages; death eighteen months after onset of disease.*—Mr. S., aged seventy years, was recommended to consult me by Dr. R. S. Stevenson, of Innellan, who kindly furnished me with the following report of the case: "The patient consulted me March, 1889, when he complained of sore-throat and difficulty in swallowing. On examination a small, round ulcer, an eighth of an inch in diameter, was plainly seen on the right tonsil. The edges were prominent and the surface covered with an

adherent slough, the tonsil itself being slightly enlarged and congested. At this time the glands of the neck were not enlarged. His previous health was good, and there was no history or evidence of syphilis. In June of the same year the question of operating was discussed, and Dr. David Newman's opinion was asked, but even although he strongly advised the removal of the tumor, the patient would not consent. The pain gradually increased, and by the end of summer was constant and very severe in the occipital and temporal regions. Locally the disease gradually spread, involving the whole tonsil, and by January, 1890, the lower jaw was implicated. In March there was a very severe bleeding, which lasted for six hours and only ceased with the continued application of ice. After the hemorrhage the pain in the head and in the mouth disappeared for fully a month, and when it did return was less severe than formerly. Swallowing also was easier. At the time of death (September, 1890) both the upper and lower jaws were involved as well as the cheek, but there appeared to be no tendency to spreading in a downward direction." When I saw Mr. S. for the first time I removed a small portion of the tumor for microscopic examination, which proved it to be a typical epithelioma. With the exception of the man's age all the circumstances were in favor of an operation, and I therefore advised removal of the tumor, but the patient and his relatives would not hear of it. This was probably the most suitable case for operating that I have seen.

CASE X. *Epithelioma of the tonsil and soft palate*.—Mrs. L., aged fifty-one years, was admitted into the Glasgow Royal Infirmary on the 20th of December, 1891, suffering from an epithelioma of the left tonsil and soft palate. The history of the case showed that fifteen weeks previous to admission the patient for the first time noticed that she had a difficulty in swallowing, which soon became very painful, especially on taking hot food. She tried to treat herself for some time, but ultimately had to consult her doctor, who, on account of the acute inflammation and the formation of a kind of membrane, suspected the disease to be diphtheria, but did not pronounce an opinion as to its nature. On admission the patient appeared fairly healthy, but stated that during the last three months she had been losing flesh and weight. She complained of little or no pain in the throat unless when swallowing, but great pain at times in the left ear. This pain never affected her until after the throat symptoms had developed themselves.

An examination of the throat showed the left tonsil to be swollen and ulcerated. The ulcer extends from the tonsil to the anterior pillar, and to the margin of the soft palate and uvula. There is not much enlargement of the tonsil nor are the lymphatic glands involved, but a section of the growth shows it to be an epithelioma.

December 26, 1891. My assistant, D. D. McK. Dewar, performed tracheotomy to-day, after injecting cocaine subcutaneously, preliminary to my removing the tonsil.

I now desire to make a few remarks regarding the pathology, etiology, and diagnosis of malignant disease; after which, treatment, operative as well as palliative, will be discussed.

In many of the recorded cases of cancer of the tonsil the surgeon has failed to state the variety of the disease he had to deal with. It is

therefore difficult to state exactly the relative frequency in which epithelioma, encephaloid, and scirrhus cancer occur, but even although the distinctions alluded to have not been made, the descriptions of their clinical history of the cases and of the anatomical character of the tumors have been in many instances sufficiently well marked to warrant me in forming a conclusion respecting the true nature of the lesion. In a few instances it has been found impossible to form an exact diagnosis.

The greatest confusion has existed in malignant disease as it attacks the tonsil, just as in other parts of the body, in the diagnosis between encephaloid cancers and round-celled sarcomata. In consequence encephaloid cancer has been regarded as common. In both encephaloid cancer and in round-celled sarcoma the disease extends rapidly, the neighboring lymphatic glands become involved early in the progress of the disease, and such adjacent structures as the pillars of the fauces, the palate, the pharynx, the root of the tongue, or the gums, are speedily encroached upon. As a result the tumor projects into the mouth, deglutition and speech become painful and difficult, and respiration is impeded even to impending suffocation. The mouth comes to be occupied by decomposing and sloughing masses of the tumor, the breath is fetid, and acrid irritating and offensive discharges trickle from the mouth; hemorrhages are frequent and occasionally copious, and death speedily results from bleeding, exhaustion, suffocation, or septic poisoning, or a combination of these causes. In acute carcinoma, early in the course of the disease, sloughs separate and deep, foul cavities form, whereas in sarcoma, unless perhaps in the most acute variety, the tumor maintains for a shorter or longer time a consistent form, its surface for the time being is smooth and unbroken, but when the capsule is ruptured and ulceration does occur, the tumor-formation spreads with marvellous rapidity, and penetrates and infiltrates by continuity the neighboring parts. It does not spread so much by the lymphatic channels as by immediate contact.

With regard to malignant disease of the tonsil Mr. Butlin¹ remarks:

No matter what the variety of the disease, it runs a peculiarly rapid course to death, affecting the lymphatic glands at a very early period, and producing large and widespread tumors in the neck. This circumstance, so fatal to all attempts to cure by operation, may be explained by the very intimate relation which exists between the tonsil and the cervical lymphatic glands, even the ordinary chronic enlargement of the cervical glands; it is, therefore, not to be wondered at that carcinomas, which affect the glands at an early period in other parts of the body, have a still greater tendency to do so when they originate in parts which are so closely connected with the glands as are the tonsils. And when the peculiar character of the primary sarcomas of the tonsil, their similarity to the structure of the organ whether in health or in disease, is taken into account, it must be admitted that the absence of glandular affection in connection with primary sarcoma of the

¹ The Operative Surgery of Malignant Disease, London, 1887, p. 173.

tonsil would be more remarkable than its occurrence. So early in the course of the disease are the glands affected that they may appear as large swellings in the neck within a few weeks of the period at which the first signs of disease were noticed by the patient. On the other hand, there may be no visible or tangible glandular enlargement until six or more months have elapsed from the first occurrence of enlargement of the tonsil.

I quite admit the truth of these remarks, but in addition would like to point out that some sarcomatous tumors, such, for example, as the spindle-celled sarcoma, may remain limited within their capsule and therefore be capable of complete removal, as in my first case.

I may now exclude cases of acute carcinoma and round-celled sarcoma, and consider the other varieties of malignant disease of the tonsil, namely: epithelioma, scirrhous, spindle-celled sarcoma, or fibro-sarcoma, and adeno-sarcoma. Only a very few words are required for each variety. To the acute forms of malignant disease which I have just described, epithelioma is next in order of frequency. If you were to form an opinion from statistics previously collected, you would be inclined to believe that this was a rare variety of cancer, whereas, as a matter of fact, out of ninety-two cases of carcinomatous disease which I have collected I find true epithelioma in twenty-four.

In the same collection of cases scirrhous cancer has presented itself seven times; indeed, it may be regarded as one of the rare affections of the tonsil. Fibro-sarcoma and adeno-sarcoma are still less frequently met with. Barker and Scheurlen have recorded cases which may be placed in the former category, and Gray has published the only example I have found of adeno-sarcoma of the tonsil.

We now come to consider the question of treatments. In very few forms of malignant disease has operative treatment been less successful than in those instances in which the tonsil has been primarily attacked. The reason for this is not far to seek. Anyone who has carefully investigated the literature of the subject must have recognized the facts that on the one hand the disease becomes rapidly disseminated, and consequently the patient is placed beyond the curative power of the surgeon; while, on the other hand, the general practitioner who has, in most instances, had the first care of the case, has failed to recognize its nature. This is not to be wondered at, when it is remembered that most writers have taught and still teach that malignant disease of the tonsil is rare, and therefore not to be looked for; so that many of the cases have been mistaken for inflammatory or syphilitic affections, and being treated as such for a shorter or longer period, the disease has been permitted to involve the structures surrounding the tonsil, and especially the lymphatic glands. If the surgeon desires to finally stop the growth of the tumor and not simply to interrupt its progress for a time, he must have the case brought under his care at an early stage, and it must

be his endeavor to remove the tonsil and surrounding structures very freely.

The cases which present themselves may be artificially divided into two classes: first, those in which operative intervention is justifiable either with the object of eradicating or of staying the progress of the disease; and second, those instances in which palliative remedies can alone be recommended. I will immediately discuss the various methods of operating, and then proceed to consider the other palliative means which we have at our disposal of relieving the suffering of the patient and of prolonging life. These latter include the relief of pain, dyspnoea, dysphagia, and hemorrhage.

Two distinct methods of operating have been practised; first, removal or destruction of the tumor through the mouth, and the excision of the growth and of its surroundings by an external incision. Each of the methods has been variously modified according to the individual requirements of the case. Vogel published a case, in which he operated with apparent success upon a patient, previous to 1780, but from that time till 1836, when Velpeau extirpated the tonsil of a man aged sixty-eight years, no cases have been recorded. The patient was admitted to hospital suffering from a large ulcerating tumor which completely filled the pharynx, and also blocked the nostrils, so as to threaten death from suffocation. Velpeau deemed it advisable in order to control hemorrhage, should it prove severe, to cut down upon the carotid artery. He there placed a ligature round it to be tied if required. This precautionary measure having been adopted, he then introduced through the mouth a sharp hook with which he dragged the tumor forward and to the middle line, while at the same time, by means of a short knife, he divided the soft palate, and dissected out the mass of the tumor. Subsequently, by means of an external incision, he extirpated some lymphatic glands. The patient died from prostration and septic poisoning on the eighteenth day after the operation, and at the *post-mortem* examination the primary growth was found to be completely removed, and no secondary formations were discovered.

Again, in 1846, M. Feno states that M. Roux¹ (⁷⁸) removed a soft carcinomatous tumor from the tonsil of a woman, aged forty years, by the mouth; and also by an external incision behind the jaw he excised an affected gland which was involved in the disease. Mr. Lawrence (⁶⁷), in his lectures on Surgery,² describes the following case:

A man of about forty-five years of age, who had always enjoyed good health, his occupation through life having been agricultural, came into St. Bartholomew's under my care, for an enlargement of the right tonsil, presenting the usual character of hypertrophy, and obviously requiring excision,

¹ For references, see Bibliography at the end of this paper.

² Lectures on Surgery, p. 611. 1863.

an operation which I had never performed except on much younger subjects. The only complaint was of some difficulty in swallowing, apparently dependent on the enlargement. This was rather beyond the bulk that could be passed into the opening of the so-called guillotine, usually employed in the operation. I therefore cut off as much as protruded, with the effect of remedying completely what had been complained of. The part removed was simply hypertrophied tonsil. He returned to the country, with a strict injunction to come back if any further inconvenience should be experienced. He came to the hospital again in the month of October with a swelling as large as an egg, proceeding from the former site, and seeming to fill the pharynx, so as to produce a formidable impediment to the act of swallowing. This I removed with the *écraseur*, getting the loop of the chain over the lower end of the swelling, which was at some distance below the tongue, drawing up the ends, so as to include the root of the mass, and then fixing them to the movable branches of the instrument, the action of which caused so much choking feeling and involuntary efforts of the surrounding parts, that it was necessary to hasten the process, which was accomplished almost without loss of blood. The part removed appeared as an entire tonsil, simply enlarged by hypertrophy, with slight surrounding covering of cellular tissue in a perfectly natural state. The section presented a substance of very light brown tint, similar to that of the natural gland and in a lobular arrangement. Mr. Savory reported that a most careful microscopical examination detected nothing but gland elements. This patient came once more to the hospital in July of the present year, with a swelling apparently glandular, larger than my fist, under the right sterno-mastoideus, of firm but not scirrhus hardness, and covering closely all the important structures at the side of the neck up to the angle of the jaw. It was not painful, and had not been so during its increase, which had been rather rapid.

* Mr. Lawrence regarded this case as one of malignant disease.

Between 1860 and 1870 cases were operated upon by Erichsen (⁵⁷), Warren (⁵⁸), Houel (⁶⁶), and Langenbeck (¹⁸), the last-mentioned surgeon being, according to Hueter, the first to operate by an external incision, in the year 1865.

Previous to the publication of Langenbeck's and Hueter's cases, Professor D. W. Cheever reported in an American medical journal,¹ in 1888, a case operated on by him.

Having given this very brief historical sketch of the operations for removal of the tonsil in malignant disease, I shall now proceed to consider in detail the various methods employed.

Tracheotomy having been performed a week previously, an anæsthetic is administered through the tube, and when the patient is completely under its influence the larynx should be plugged with sponge so as to prevent the possibility of any blood passing into the trachea. The surgeon has then to select his method of operating. In many instances no preliminary tracheotomy has been performed, but the risks of that operation are very slight and the advantages considerable.

A. Removal of the tumor through the mouth:

1. By chemical caustics and escharotics.
2. By the tonsillotome or curette.

¹ Boston Medical and Surgical Journal, p. 54, 1869.

3. By ligature.
 4. By *écraseur*.
 5. By electric cautery and *écraseur*, and thermo-cautery.
 6. By electrolysis.
 7. By incision :
 - a. Without tracheotomy.
 - b. With tracheotomy.
- B. By external incision :
- a. Without tracheotomy.
 - b. With tracheotomy.

A. 1. Removal by chemical caustics and escharotics has been practised in a considerable number of cases which have been published ultimately as examples of malignant disease; but fortunately for the credit of the profession, this treatment has not been applied at a stage when the nature of the disease could be easily recognized. But whenever employed for the treatment of malignant tumors the effect of the chemical agents has been evil rather than good. The only surgeon who seriously recommended the use of caustic for the treatment of malignant disease of the tonsils was Maisonneuve⁽⁷³⁾, who suggested *cauterisation en flèches* as a means of removing a cancer of the tonsil. This was, however, in the year 1859, at a time when powerful caustics were employed for the destruction of cancers; but notwithstanding the feeling of the time in respect to this method of treatment, the members of the Société de Chirurgie de Paris, before whom his paper was read, almost unanimously disapproved of this mode of treatment.

2. Excision by the guillotine, the tonsillotome, or the curette, has also been employed by some surgeons, but on inquiring carefully into the history of these cases it will be found that in those instances in which one or other of these methods of removal was employed the serious nature of the disease from which the patient was suffering was either not appreciated at the time, or portions of the growth were removed for diagnostic purposes only.

3 and 4. The fear of hemorrhage during an operation has induced a few surgeons to adopt the use of the ligature as a means of cutting off the blood-supply, and so causing the growth to slough away. But even those who have employed this method condemn it as useless; and but little better success has attended the use of the *écraseur*, as employed by Lawrence⁽⁶⁷⁾, Demarquay⁽³¹⁾, Thomas⁽³¹⁾, and Erichsen⁽⁵⁷⁾. In all these cases a very temporary advantage was derived from removing only a portion of the bulky mass which protruded into the mouth and pharynx. As pointed out by Poland¹ ⁽⁷⁶⁾, removal of malignant disease by the *écraseur* may be undertaken when the tumor has not attained any large size, and when the loop of the instrument can readily embrace the

¹ British and Foreign Med.-Chir. Rev., p. 490.

whole base of the tumor; but danger is attached to this operation at all times, as the loop may include some of the important vital structures in the neighborhood—viz., the internal carotid, jugular vein, and pneumogastric nerve. To obviate this, Demarquay⁽⁵¹⁾ had recourse to Blandin's procedure of a temporary incision in the neck so as to lay bare the structures he wished to avoid, and having them held aside by an assistant, then introducing the finger and conducting the loop of the *écraseur* over the tumor from within the mouth; he thus, so far, kept all the important vessels and nerves from the grasp of the loop. His description of the operation is as follows:

"The case was one of ulcerating cancer of the tonsil, palate, and advancing on the base of the tongue; there was no glandular enlargement, and iodide of potassium had failed. Having carefully ascertained the extent of the disease, I thought I could remove the whole with the linear *écraseur*; but in order to avoid comprising within the loop of the *écraseur* any important structure, I made an incision four fingers' breadth along the course of the internal border of the sterno-mastoid. I reached easily the vessels and nerves in contact with the tonsils, and separated them; having done this, I proceeded slowly to remove the tumor with the chain of the *écraseur*; and having first made an oblique incision through the velum palati to the right of the uvula, and then carefully using Chassaignac's instrument, I seized the tonsil with hook-forceps and drew it forward to the side of the mouth, and threw the chain around the mass comprising the curved scissors a large piece of the right portion of the velum. During the proceeding with the *écraseur*, I took care that it did not pass beyond the prescribed limits. There was no hemorrhage. I removed afterward with the mouth, and a portion of the tongue in relation with the tonsil, as also some hypertrophied glands. I closed the preliminary incision, which united in a few days. The conditions inside the mouth proceeded satisfactorily, although he had spitting of blood for forty-eight hours, which ceased under the use of ice. The operation entirely succeeded; his health was restored, and he became stout. However, a return may take place."

By thus making a preliminary incision, he not only secured the carotid from injury, but was enabled to ascertain that the cancer had not extended along the pharynx.

5. Within recent years the thermo-cautery and the galvano-cautery have been largely employed in general surgery, and also in attempts to remove tonsils the seat of malignant disease. Tumors of this kind have been removed *per vias naturales* in several cases, as recorded by Gorecki⁽¹²⁾, Wolfenden⁽³⁶⁾, Brown⁽⁴²⁾, Cozzolino⁽⁷⁾, Bruce⁽⁴³⁾, and Donaldson⁽⁵¹⁾.

A preliminary tracheotomy may be performed, as was done by myself (in Case I.), or, in order to get more complete access to the diseased parts, an external incision may be made previous to removal by the cautery. This latter method was adopted by Barker⁽²⁾ and Franks⁽⁶¹⁾. Mr. A. E. Barker¹ describes his operation as follows:

An incision was first made along the anterior border of the sterno-mastoid muscle over the gland, and it was carefully shelled out of its bed, which lay upon the great vessels of the neck. Having purposely exposed the latter, I

¹ Trans. Path. Soc. Lond., vol xxxvii. p. 219.

felt less hesitation in attacking the diseased tonsil, as bleeding could be easily controlled if severe. Leaving a carbolized sponge in the cervical wound for the present, I made a vertical incision through the anterior pillar of the fauces with Paquelin's cautery knife, and through this was able with blunt instruments to enucleate the diseased tonsil with comparative ease, and without in the least breaking into the mass. As this was all done by blunt dissection, only a drachm or two of blood was lost. I then removed a small nodule of growth seated at the opposite side of the base of the tongue. This was the size of a nut, and was quite distinct from the tonsillar growth; it had not been detected before. The resulting wounds were dusted with iodoform, and that in the neck was sutured. Both healed quickly without any reaction, and the patient made a rapid recovery. In May (three months after the operation) the disease was found to be advancing rapidly in the glands, and on July 14th the patient died without having any throat symptoms.

In my Case VIII. the operation was performed with the galvano-cautery, as follows:

A twenty per cent. solution of cocaine was placed in a hypodermatic syringe, and along the line of the intended incision, at distances of a quarter of an inch, one drop of the solution was injected. The patient was seated on a chair, and after five minutes he was asked to open his mouth, and with the cautery at a white heat I rapidly cut out the tumor and a considerable part of the surrounding healthy tissue. The patient did not suffer any pain to complain of; there was absolutely no bleeding, and the tumor, which was an epithelioma, had not recurred nineteen months after the operation.

6. The treatment of sarcoma of the tonsil by electrolysis has been as unsuccessful as the treatment of malignant disease by other incomplete methods. This mode of removing a diseased tonsil has been employed by Holger Mygind, of Copenhagen (²⁶), but with poor success. As a warning to others who think much of electrolysis, I will quote Mygind's words as reported:

"The treatment with electrolysis was commenced on February 10th, and continued until March 12th, during which time the patient underwent eighteen séances, each lasting about twenty minutes. As a rule, the electricity was applied four or five days running, with intervals of three or four days. The current was produced by means of the galvanic battery recommended by Apostoli, of Paris, for gynecological operations; besides this, a rheostat and a rheometer were always used. The strength of the current varied from eight to twelve milliampères, beyond which strength the application caused pain. In the first seven séances the positive electrode was applied externally on the neck and the right side of the head (not including the external ear), in the form of a large fenestrated soft plate of zinc covered with moistened gauze. Later, both electrodes were applied to the growth in the form of gold needles, of which never more than two were connected with each pole. Whilst the needles connected with the positive pole always remained fixed in the growth, when first applied the negative needle had to be fixed by means of a long holder fitted to the patient's forehead, on account of its inclination to slip out. The needles were all applied so that only the peripheral part of the tumor was destroyed.

The electrolytic treatment transformed the growth by degrees to a grayish, necrotic mass in its peripheral parts, so that it was at last possible to separate the whole original tumor by means of a slight cut with a knife through the uvula, which meanwhile had become involved in the growth. There was not the least bad smell produced by the process, nor any other

sign of putrefaction, and no purulent matter whatever was observed. The temperature, taken every day, never rose above 99°, excepting once, when it reached 100.2°. The pulse was never beyond 60 (Mr. M. was a tall man). The malignant tumor, however, pursued its rapid growth, which the destruction by electrolysis was unable to keep up with, and the increasing debility of the patient soon prevented further active treatment. The patient lost about nine pounds in weight during the electrolytic treatment, but was nearly all the time able to attend to his business (office clerk). Deglutition was not rendered more painful, and the pain in the throat and ear was considerably less during the latter part of this period, probably owing to the diminished tension in the growth, caused by its destruction. During this time the patient took 15 grains of iodide of potassium three times daily. The last period of the disease lasted from March 13th until April 26th, when death occurred.

7. The removal of malignant disease by incision through the mouth was, as far as I am aware, first performed by Velpeau⁽⁶⁶⁾, and was subsequently described by Warren⁽⁶⁸⁾, as a bloody and dangerous operation, requiring for the suppression of hemorrhage the employment of the actual cautery, or ligature of the carotid. Hence, you see, the objection to incision of the diseased tonsil with a knife or sharp instrument, is that severe hemorrhage is likely to follow, unless in cases of sarcoma, where the growth is encapsulated, under which circumstances it may be shelled out, after a preliminary incision. The finger may be used in preference to any instrument, and by completely dissecting the growth with the finger-nail more complete enucleation may be effected than by other means. When the knife is to be employed, the question suggests itself to the surgeon, Am I to remove the tumor by an incision through the mouth, by an external incision, or by a combination of these methods? If the growth is limited in size, and the glands are uninvolvement, the first-mentioned operation may be sufficient. The mouth of the patient should be held wide open by a suitable gag, while his head is allowed to hang well over the operating-table. The surgeon then seats himself at the patient's head, so that as he views the mouth the palate is lowermost and furthest away, while the tongue is uppermost and nearest the operator. By adopting this method any blood that escapes flows from the mouth at once, or may be washed out with a douche. (This method I employed first in Case I.) The mouth should be well illuminated with an electric forehead lamp, and the tumor removed by whatever means the surgeon considers most desirable for the individual case. The most common method is to seize the growth with a sharp hook or forceps, and then with a knife rounded at the point the tumor is carefully cut out, small incisions being made at each stroke, and bleeding-points tied or compressed as they appear. If necessary, the cautery may be applied. Again, in cases where the lymphatic glands have become involved they may require to be removed by an external incision, or if the disease has extended beyond the tonsil and come to involve such structures

as the pillars of the fauces, the arch or margin of the palate, or the base of the tongue, a more extensive operation than the one just described may be required.

B. Operations by external incision have now been practised in a considerable number of cases. As far as I can learn, Langenbeck⁽¹⁸⁾ was the first surgeon to use this mode of operating, in the year 1865, and the result was successful; hence, since that time, most surgeons have shown a preference to remove the tumor by pharyngotomy rather than through the mouth. The reason for this is obviously that the external incision gives the surgeon more complete control over hemorrhage, enables him to remove the tumor more completely, and gives him more room. The method adopted by Cheever¹ is described as follows:

The tumor was removed by external incision, the myo-hyoid muscle divided, the lower jaw sawn through in front of the masseter, and the tumor pressed out of the mouth. It was covered with a delicate capsule, and exuded soft material on puncture. It was removed without much difficulty along with the capsule. The facial artery and jugular vein were the only vessels tied, and there was no hemorrhage. The wound in the pharynx was not sutured, the jaw was wired, the external wound brought together partially and washed with a two per cent. borie acid solution. On the thirtieth day the wires were removed, the jaws being firmly united. On April 27th a second operation was performed for a tumor on the same side of the neck, and a large glandular mass was removed from the anterior carotid triangle. The throat remains healthy (May 15, 1889). The tumors proved microscopically to be round-celled sarcoma.

In order to obviate the danger of blood passing into the trachea, and to facilitate the administration of the anæsthetic, it is now thought proper to perform a preliminary tracheotomy. By doing so the surgeon is free to perform a more complete operation. Czerny was the first to adopt this method. He cut down upon the lower jaw, which he divided between the second and third molar teeth. By separating the fragments the tumor was exposed and removed, and bleeding-points secured or cauterized.

In this operation it may be necessary to divide the gustatory, the hypoglossal, and the glosso-pharyngeal nerves, the stylo-hyoid, the digastric, and the stylo-glossus muscles, as also the lingual and some branches of the facial artery. The wound should then be washed out thoroughly with an antiseptic solution, the bone united with strong silver-wire sutures or by pegs, a drainage-tube inserted, and the wounds in the mucous membrane and skin sutured with two separate sets of stitches.

Another mode of operating was adopted by Mikulicz⁽⁷⁴⁾ and Kuster. The advantages claimed for it are: that the lymphatic glands can be very freely removed, that blood escapes externally and not into the mouth, and that the wound can be dressed aseptically so long as the

¹ Medical Record, May 25, 1889.

disease does not involve parts in the mouth beyond the tonsil. The endeavor is to remove the tonsil and affected glands without cutting through the mucous membrane of the mouth; it is, therefore, obvious that the operation can only be used for the removal of encysted tumors, such as sarcomata. In cases where ulceration has occurred it is inapplicable. By making an incision downward and forward from the mastoid process of the temporal bone to the greater corner of the hyoid, in a line midway between that of the stylo-hyoid and stylo-pharyngeus muscles, the soft parts are raised from the inferior maxillary bone. The jaw is then divided, and the ramus separated from the temporal muscle, so as to permit the bone to be drawn to one side. The masseter, the internal pterygoid, the digastric, and the stylo-hyoid muscles are then divided, and if care is not taken important branches of the portio dura of the seventh nerve may be injured. By this incision the tonsil is exposed, and also the lymphatic glands at the angle of the jaw, which are so frequently involved.

Before leaving the question of operation a few words are required regarding the results of surgical interference: first, as regards the possibility of cure; and, second, as a palliative measure.

Of the 144 cases of malignant disease of the tonsil which I have collected, in only 56 was an operation attempted. In the remaining instances, as in the majority of my own cases, the disease was too far advanced to encourage the surgeon to operate.

With respect to the incomplete methods of removing the diseased tonsil, such as the application of chemical caustics, removed by the *écraseur*, ligature, tonsillotome, curette, or by electrolysis, they require only to be mentioned to be condemned as not holding out the least prospect of cure. Therefore, the only question worth consideration is the relative merit of removal through the mouth or by external incision.

As in cases of malignant diseases of the nasal fossæ, so also in those diseases as they attack the tonsil, in the early stage, from naked-eye observation alone it is almost impossible to say whether the disease is carcinomatous or sarcomatous. In some instances it is even difficult to pronounce the disease to be a tumor-formation. Cases are on record where malignant disease has been mistaken for a syphilitic affection, for abscess of the tonsil, acute tonsillitis, diphtheria, simple hypertrophy, and tubercular disease.

The difficulty in diagnosis cannot be too strongly enforced on the attention of the general practitioner. From a study of the literature of the subject and from my own experience, I am convinced that a large number of the operations have been unsuccessful on account of failure in recognizing the seriousness of the disease. When there is any doubt a portion of the tonsil should be removed, examined immediately by the

microscope, and if found to be malignant, the tumor should be completely excised without delay.

There are two considerations which induce the surgeon to operate. He must either have a hope to remove the disease completely or he must have some confidence that he is able to prolong life and alleviate suffering. When he can do any of these, then, and only then, is he justified in submitting the patient to a severe or perhaps dangerous operation.

In carcinomatous disease cure is very rare. The most successful case I know of is one communicated to me by my colleague, Dr. William Macewen, of which the following is his short summary :

W. P., aged fifty-five years, had right tonsil, large portion of pharynx, and portion of back of tongue removed through incision extending from angle of mouth to the angle of lower jaw on right side, June 27, 1878. I saw him twelve years after in good health ; I have not heard from him during the last two years, and I fear that he may be dead. He was sixty-seven years of age when I saw him last.

Dr. Macewen also had another case of removal of an epithelioma of the tonsil, but the patient was only kept under observation for two years, during which he was well.

Besides the cases just described I find only four cases of cancer of the tonsil in which local recurrence did not take place ; they are recorded by Quintin, Fowler, Mikulicz, and myself (Case VIII.). The patient operated upon by the surgeon first mentioned was reported to be free from disease two and one-half years after excision of the growth.

In Fowler's ⁽⁶⁾ and Mikulicz's ⁽¹¹⁾ cases local recurrence did not occur, but carcinomatous disease attacked other parts. In the former case a very complete operation was performed through an external incision ; the lingual and facial arteries were ligatured as well as the external jugular vein. As a consequence of free removal of the tumor and affected glands no local recurrence occurred, but the patient died from cancer of the stomach. Mikulicz's patient remained locally free for two years, when she died of cancerous disease elsewhere. In my own case the patient is still perfectly well (January, 1892), nineteen months after the operation.

Passing now to review the examples of operations for the sarcomata. The most successful operations as far as I know have been recorded by Barker ⁽²⁾, Cheever ⁽⁴⁾, Gorecki ⁽¹²⁾, Gansmer ⁽¹¹⁾, Homans ⁽¹⁴⁾, Langenbeck ⁽¹⁵⁾, Richardson ⁽²⁹⁾, and my own case (Case I.). I have communicated by letter with the above-mentioned surgeons and with others, in order to ascertain the ultimate result of their operations ; two of my letters have failed to reach their destination from some cause, and in three other cases I have received no reply. It appears to me that all these cases are of great interest ; I shall, therefore, quote from the replies which I have received, and I shall take the cases in their order.

Mr. A. E. Barker informs me in respect to one of his cases (that quoted by Mr. Butlin in his book, *The Operative Surgery of Malignant Disease*, page 180) that he was well a year or more after the operation. In his letter he mentions a similar case in which the patient was a female aged twenty years, and where the growth had existed for six months. At the time of the operation the tumor was the size of a walnut, but the lymphatic glands were uninvolved, and there was no recurrence two years after.

Dr. D. W. Cheever says:

So far as I know, recurrence has taken place in all my cases in from four to six months. It has recurred usually in the glands of the neck, once on the palate. I believe I have now operated four times, always with temporary relief and good recoveries from the operation.

M. Gorecki's patient was reported to be alive and free from disease two years after the operation, and Gansmer's two and one-half years. Dr. John Homans, of Boston, who operated upon a case of sarcoma by external incision on May 30, 1890, informs me that she came to see him on December 10, 1891—

Looking well. Her health is good, and she has gained in weight. Her general health was never better. There is no sign of any return in the scar of the original operation or in the glands of the neck, but there have been two operations since 1890 for the removal of small affected glands. But now (December 1891) there is no sign of recurrence or development elsewhere.

Langenbeck's patient recovered from the operation, but how long he remained free from recurrence I have failed to ascertain. Dr. M. H. Richardson operated successfully by external incision in 1886; the tumor was a round-celled sarcoma, and the patient has remained well ever since.

In a letter dated December 22, 1891, he says:

The last time I heard from her she was in perfect health, and was much surprised that I should have written asking if she was still alive.

In my case (Case I.) no recurrence occurred in the primary site of the disease, but the patient died from a round-celled sarcoma of the opposite tonsil five years after the operation.

A few remarks may now be made regarding the palliative treatment, which may be employed in those cases where operative measures are unsuitable. In all cases of malignant disease of the mouth the septic and acrid condition of the secretions causes considerable irritation, and by its local absorption hastens the progress of the disease and causes the patient great suffering, or by being swallowed, seriously interferes with digestive processes. It is, therefore, desirable to cleanse the mouth as thoroughly as possible by the use of antiseptic washes, sprays, or powders. The solution which I first employ in such cases is an alkaline mouth-wash, containing equal parts of carbonate of potassium, borax,

and chlorate of potassium. A teaspoonful of this mixed powder should be dissolved in half a tumblerful of tepid water to which a dessert-spoonful of glycerin with carbolic acid is added, and used as a mouth-wash every three hours. After using this wash for two or three days it is a good plan to spray the mouth two or three times daily with liq. hydrarg. perchlor. for a minute each time after cleansing with the wash. A spray of iodoform dissolved in ether and alcohol also acts well; oil of eucalyptus, a solution of salicylate of sodium, or of sulpho-carbolate of zinc may be used in the atomizer. Again, antiseptic tablets are very easily carried about by the patient. The one which I find most useful is composed of hydrochlorate of cocaine, gr. $\frac{1}{2}$; perchloride of mercury, gr. $\frac{1}{100}$; iodoform, gr. $\frac{1}{2}$; chlorate of potassium, gr. xx; sugar, gr. x. The tablets should be allowed to dissolve in the mouth, but the saliva should not be swallowed. Not only is the immediate discomfort and pain relieved to a considerable extent by the measures just mentioned, but the progress of the disease is delayed.

As the tumor increases in bulk other difficulties and dangers present themselves; pain, difficulty in breathing and swallowing, and the danger of hemorrhages is increased.

Pain may be relieved either by local applications or by the administration of hypnotics. At first a liniment composed of equal parts of hydrate of chloral and camphor, applied over the swelling in the neck, is sufficient to relieve the patient's general suffering when the parts are at rest. But before the patient takes food it will be found necessary to spray the throat with a ten per cent. solution of cocaine. The only difficulty in the employment of this drug is the tendency it possesses to produce copious salivation or cocaine intoxication when used continuously or too freely. When it is not found to act well, a solution of morphine, tincture of belladonna, of stramonium, or other anodyne may be used with good effect as a gargle. As a rule, during the advanced stages of the disease, the pain is so severe that the patient requires to be kept under the influence of morphine by hypodermic injections.

Interference with respiration is also common, either as a consequence of physical obstruction by the growth, from spasm of the glottis, or as a result of the entrance of blood or food into the trachea. Under any of these circumstances the patient may be relieved by tracheotomy, while at the same time, if there is much difficulty in swallowing, the patient may be fed through a soft flexible tube introduced into the œsophagus. Krishaber nourished a patient, who suffered from a malignant tumor of the œsophagus, for 305 days through a tube introduced by the mouth, but in the majority of cases of disease of the tonsil the danger of inducing hemorrhage is so great that one would prefer to pass the feeding-tube through the nostril, selecting the one on the opposite side to the diseased tonsil. Partial removal of the tumor may also be resorted

to, but this practice cannot be highly recommended, as rapid increase in the size of the growth soon follows the operation.

Hemorrhage is a very common accompaniment of malignant disease of the tonsils, especially in the round-celled sarcomata and in the encephaloid carcinomata. When bleeding occurs, two dangers present themselves: the patient may die from exhaustion or from suffocation by blood entering the trachea. To prevent the former employ, in the first instance astringent gargles, or, as recommended by M. Plicque, a solution of antipyrine, 1 part in 50, may be used as an hæmostatic. Should such treatment not succeed, then ligature of the base of the tumor, either by one ligature or by several, may be resorted to, or cauterization by the thermo-cautery or galvano-cautery may be used. In the event of none of these means of treatment succeeding, ligature of the lingual and facial arteries may be required, or as a *dernier ressort* the carotid may be tied.

When there are indications of the blood entering the trachea, but more especially if, as a consequence, suffocation is threatened, tracheotomy should be performed and a tamponed tube introduced through the wound. To pass a tube through the mouth and plug the larynx from above is a difficult operation in such cases.

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present in a high degree of development. There are two fibres which are natural; the others have been more or less eaten away in their centres by disease. The destructive process, in its most extreme form of development, removes the whole of the muscular substance from the centre of the fibre, no part of which, when examined with the microscope, will present the usual appearance of muscular tissue except the thin outer walls, and even these (Fig. 1, No. 7) may show the cross-markings characteristic of heart muscle only in places. A curious feature is the way in which the muscle nuclei often lie loosely in the cavities, without attachment to the remaining tissue. This is very different from the natural condition when the nuclei are closely surrounded by the muscular tissue. This separation of the nucleus was very marked in the two fibres represented in Fig. 1 as Nos. 5 and 7. Nos. 3 and 5, and, in a slightly different stage, No. 4, represent another phase of the destructive process. In them, instead of a single large cavity in the centre, there are several smaller holes irregularly distributed through the fibre, and in No. 5 the muscle nucleus lies in the largest of these. The degenerative process is more advanced in No. 4 than in the two others, for in it the only muscular tissue remaining is that constituting the thin outer walls, with a little more which is irregularly distributed through the inner portions, and some shreds of a material which must be the endomysium or fine connective-tissue substance which normally exists in the muscular fibres. It must be understood that these cavities do not usually give the impression that during life they were empty, or even that they contained only a clear liquid, for there is always present more or less material which has no distinguishable structure. Areas presenting this condition are represented in the drawings by the dotted portions. It seems to me that this hollowing-out, when most extreme, is apt to be near the ends of the fibres, toward their point of origin or of insertion. In sections of tissue which show it I have found the hollow fibres most numerous not far from the endocardium or pericardium, and less so deeply in the centre, though, as already stated, it will be unmistakably present in all parts of the heart. The heart which furnished the fibres represented in Fig. 1 was very fibroid, but the hollow fibres were not found in the fibroid portions of it. Fig. 2 was made by the photographic process alone, without retouching, and shows fibres in varying stages of degeneration.¹ In it may be seen several of the same fibres as are in Fig. 1. In this heart, however, I was able to study the disease to the best advantage because it was present in its most extreme form.

¹ The photograph, which is a very beautiful one, was taken by Dr. George A. Piersol, Professor of Anatomy in the University of Pennsylvania.

The patient was a man fifty-seven years of age, who had been very dissipated, having eaten and drunk too much, and having done most things a man should not do. He denied ever having had syphilis, but at sixteen years of age he had an attack of inflammatory rheumatism. He said he had been healthy until recently (about six months before his death), when he became exceedingly short of breath, and had some irregular rheumatism. His condition became gradually worse and worse until he died, after having suffered to an unusually great degree with difficulty of breathing. For many weeks there was general œdema and ascites, also albumin and casts in the urine, and great atheromatous stiffening of the arteries. The post-mortem examination showed fibrosis of most of the organs, including the heart, which was much enlarged. The kidneys were contracted, and there was an extraordinary amount of chalky deposit, which was not confined to the walls of the arteries alone, for there were large deposits in the mesentery and in the posterior walls of the abdominal cavity.

The first case in which I discovered the presence of the morbid change in the heart-fibres was that of a man past middle life, who died with aortic regurgitation. He denied having had rheumatism and syphilis, and he died of exhaustion after an illness of a few months, without ever having had dropsy, or dyspnœa, or any evidence of kidney disease. There was aortic disease, and the heart was enlarged. The kidneys were rather larger than normal, and but slightly diseased. Excessive hollowing out of the muscular fibres of the heart was found.

It is impossible at present to predict from clinical manifestations which cases will present this curious change in the heart. Some idea, however, of its clinical and pathological accompaniments may be gained by contrasting cases in which the disease was present with others not so diseased. As was stated in my paper showing the existence of capillaries in the heart's muscle-fibres, I have in my collection sections of forty-nine human hearts, accompanied in most instances by clinical histories of the patients. In some typical cases of Bright's disease, both of the interstitial (or contracting) and of the parenchymatous forms, hollow fibres were present, and in other like cases I have not found them. In hearts showing great increase of fibrous material, it has in some instances been present and in others absent. It is a curious feature that the vacuolations, when present in a fibroid heart, occupy almost exclusively those portions of the organ not affected by the fibroid overgrowth; in such regions it will be conspicuous by its absence. There are in my collection sections from two hearts showing more marked fibroid overgrowth than any of the others; in one, the hollowing-out of the muscular fibres is very great, in the other there is none of it; in both cases the kidneys were very much contracted. The history of one of these cases has been given in some detail above. Examination of such sections as are in my possession shows the vacuolation of the fibres to be absent in cases of brain syphilis, sarcoma, general miliary tuberculosis, Bright's disease,

pulmonary phthisis, typhoid fever, pneumonia, dysentery, epithelioma of the bowel, and aneurism, and to be present in what clinically was recognized as organic heart disease, Bright's disease, typhoid fever, ulcerative endocarditis, and in young infants that had died of wasting. I have sections from the hearts of a number of foundlings who died during the earlier months of life from the wasting so common among infants of that class, and in some instances vacuolation of the heart's muscle-fibres was unmistakably present, and in others absent. In many respects the histological condition of heart muscle in young infants, as might be expected, is very different from what it is later in life. In a child ten years of age who died with dropsy, and had amyloid disease of the liver, spleen, and kidneys, and of the heart and lungs, too, there was most extreme hollowing-out of the muscle-fibres. Some of the fibres in this case, when seen in longitudinal section, presented small bulbous-looking swellings at points where they were hollow, and thus making it appear that some distending process had occurred where the vacuolations existed. In another child of twelve, with cardiac hypertrophy and dropsy, the vacuolations were also present, but in much less degree than in the previously mentioned case.

It has been my endeavor to describe this pathological change so that it may be recognized by others; and, as previously stated, it was while studying it that I was led to the discovery that capillaries normally penetrate to the very centres of the muscular fibres of the heart. The kind of cases in which the disease was found I have also denoted. It is now desirable to understand, if possible, the nature and origin of the morbid process. The fact that the muscular fibres of the heart are penetrated by capillaries, and are not, therefore, truly solid bodies, together with the appearance of the spaces already described, lead to the almost inevitable conclusion that the process is one of cystic degeneration. The only other conceivable explanation is that the cavities are minute aneurisms, being dilatations of the capillaries after they have passed into the muscular fibres. Such an assumption, however, would seem to be negatived by the nature of the material which lies within the cavities. Any material visible is amorphous and granular, or is yellowish pigment in irregularly shaped flakes, all looking as if suspended in a liquid, and thus presenting the precise characteristics of any section of a cyst. If the process be one of multiple capillary aneurism, fresh blood should be found in the spaces instead of the detritus described. Such being the case, it would seem hard to escape from the conclusion that the cavities are true retention-cysts, and that they are produced in a manner parallel to that of renal cysts. A capillary must become blocked in two places and the portion between these dilate, and thus a cyst be formed. It is, of course, quite possible that the vacuolations are

false cysts formed by the escape of blood into the substance of the fibres (hæmatocele), or by degeneration and softening of the muscle-substance itself. This, though quite admissible as a possible explanation of the pathological process, is much less likely to be the real one than is the supposition that they are true retention-cysts; for, in the first place, there are in the fibres cavities, the capillaries, in which cysts might form, and, in the second, the contents are precisely similar to those common to cysts. These cavities present another characteristic which is common also in renal cysts. Shreds, or festoons, or shelf-like projections of connective tissue hang irregularly across the cavities. Nos. 3 and 4, Fig. 1, exhibit this appearance.

If time and the progress of events should establish that these minute cavities in the heart's muscle-fibres are true retention-cysts, having their origin within capillaries in the fibres, it will be the first time that it has been shown that cysts do originate within the vascular channels, as they are already so well known to originate within other glands, as they stand, the renal tubules and other gland ducts. There seems to be no reason in the nature of things why such should not be the case.

The presence of capillaries within the muscular fibres of the heart, a fact in normal anatomy, and the occurrence of cysts within the fibres, a fact in pathological anatomy, and the fact that the one observation led to the other, are an illustration of the correctness of the view so much dwelt upon now, that the two branches of science, normal and pathological histology, have close and important relations. In this instance the train of events was as follows: first, as the result of pathological study, the recognition of the comparatively large cavities in the fibres, which at that stage were inexplicable. From this came the desire to examine more minutely the histology of the human heart, and this resulted in the observation that the capillaries not only closely surround the fibres, but that they actually penetrate them, a fact which seemed at first in no way connected with the holes eaten into the fibres by disease. Lastly, further and more careful consideration leads to the conclusion that the larger spaces which result from disease are but cystic dilatations of the natural blood-channels.

It is important to remember that this disease, which I have called cystic degeneration, is very common, and has been found by me to be present in many ordinary well-recognized diseases. What bearing it may be found to have clinically is, of course, impossible now to predict, but it seems not unlikely that it may be important. The thoughts certainly are new ones, both that cystic disease may have its origin in the vascular system, and that it is a common cause of degeneration of the heart, an organ which is so prone to degenerate, and degeneration of which is so far-reaching in its results.

EXPLANATION OF FIGURES.

Fig. 1.—The Nos. from 1 to 6 inclusive represent heart muscle-fibres in cross-section, and were all drawn from the same microscopical preparation. No. 7 was drawn from a preparation in which the fibres were cut longitudinally. The camera was used, and they were drawn to scale, the amplification being five hundred diameters. Nos. 1 and 2 are ordinary fibres, and present no evidence of disease; they were put in the picture to contrast

FIG. 1.

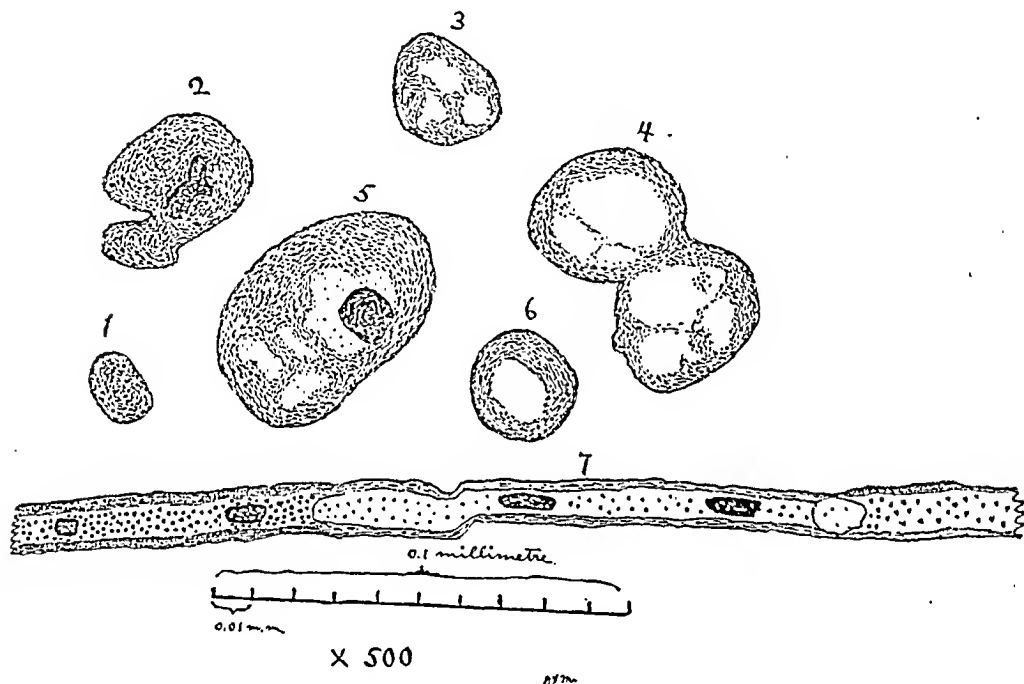
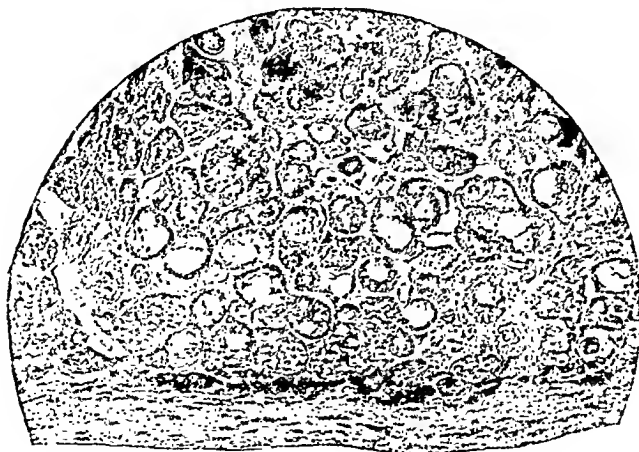


FIG. 2.



with the other fibres which are diseased. The irregular shape of the nucleus shown in No. 2 is not unusual. The other fibres present evidences of advanced disease. Nos. 3, 4, and 6 look as if irregularly hollowed out, the dark areas being intended to represent the muscular tissue and endomysium (intramuscular connective tissue), while the lighter portions are areas from which the muscle-substance has disappeared as a result of disease. No. 5 is a large fibre, showing several spaces from which the muscle-tissue has gone, the space being empty, or filled with a more or less granular material. There is also a nucleus which lies in a space which is empty or filled with slightly granular matter, this being represented in the drawing by a dotted area. No. 7 is a drawing of a fibre cut longitudinally, and very well shows the irregular hollowing-out process or vacuolation which has taken place. The fibre looks as if it had been converted into a hollow cylinder divided into several compartments. The drawing was made to show that at the sides of the fibre the muscular tissue still persists, in places the cross striæ even being distinguishable, while the dots in the central portion are intended to indicate the more or less granular appearance. The nuclei lie as if they had been loose in the central space, not being in any part in contact with the muscular tissue remaining. The drawings are diagrammatic, but the dimensions and outlines are correct.

Fig. 2.—This is a photograph (a half-tone) of a single field, under the microscope, of the papillary muscle of the left ventricle from the same case as the drawings were made. Several of the fibres in the drawing are in this picture. It admirably shows the manner in which the interior of the fibres has been irregularly eaten away by disease. Neither the negative nor the print from which this was made was retouched.

NOTE.—It should have been mentioned that the sections of tissue from the appearances of which my conclusions were drawn were prepared, as far as possible, upon a uniform plan, both for the preservation of the tissue and the mounting of the sections. I thought that if this was done the unnatural appearances could with more certainty be attributed to disease than if different methods were used, in which case it might be thought that what I described as disease was due to faulty technique. The tissues were almost all preserved in seventy per cent. alcohol, and the imbedding material was paraffine, except in a few instances, when celloidin was used. The staining material was borax carmine. Considering the imbedding material employed, and that the sections were often cut from parts of tissue far from the surface of the pieces, it would be unreasonable to suppose that what I have called hollow muscle fibres were fibres from which the centres had fallen out in process of preparation—a possibility which would strike every practical microscopist.

A CONTRIBUTION TO THE STUDY OF CHOREA, WITH SPECIAL
REFERENCE TO ITS CONNECTION WITH RHEUMATISM .
AND HEART DISEASE.

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THE question of the connection between rheumatism, heart disease, and chorea has been long agitated, but with far from satisfactory results. The problem is by no means so simple as it might at first thought appear. The first question is, whether there be any connection at all between the three conditions—a negative reply to which proposition would dispose of further discussion. Granted, however, there be a connection, is it between rheumatism and chorea, heart disease and chorea, or between all three, as a result of the same pathological condition? In the latter case what is the sequence? That rheumatism leads to heart disease is an established fact. Does the heart disease thereby engendered cause chorea, or does rheumatism cause chorea, the heart disease being merely an accompaniment and in no degree a factor in the etiology?

When we realize that in the great majority of the cases clinicians have had merely the report of the parents to rely on regarding the question of rheumatism, and when, again, we realize the personal equation in estimating the existence of heart disease from given conditions, subjective and objective, the difficulty becomes apparent—a difficulty by no means lessened by the fact that pains in the limbs are frequent in children (so-called growing-pains), and that the designation rheumatism is an extremely convenient one for the practitioner as well as the family to gratify the craving for absolute diagnosis.

The last branch of the question is—given a connection between rheumatism and chorea, heart disease and chorea, or rheumatism *and* heart disease and chorea—What is the nature of the morbid process?

The writers would here disclaim all assumption to the settlement of these points. The object of this paper is rather to discuss, and possibly to offer some suggestions.

In looking over the literature one is struck by the lack of definiteness of statement. Hughes and Bennett,¹ for example, state that out of one

¹ Guy's Hospital Reports, 3d series, 1855, vol. i. p. 217.

hundred and four cases of chorea only fifteen had not had rheumatism or a cardiac murmur. This statement probably embraces cases with either rheumatism or organic or functional heart disease, as well as those having combinations of the three, rendering the statistics far too vague to be of material aid in solving so complicated a problem.

Another author speaks of cases of acute rheumatism and pains, leaving one again in doubt just what class of cases were included.

The estimates of different writers vary greatly, as may be seen from the following quotations from among them :

Flint¹ states that facts do not warrant the conclusion that the affection is to be described as essentially rheumatic. The most that can be said is that children who have had this disease are apt to become affected with chorea.

Syres,² from an analysis of 146 cases, finds that 6.16 per cent. only could be by any possibility attributed to acute rheumatism. He finds, however, rheumatic antecedents, not causal, in 23.97 per cent. and a rheumatic inheritance in 47 cases; the causes assigned by friends in 94 cases being nervous strain (fright, distress, school over-pressure). In 20 cases he found a persistent systolic murmur over the apex, 11 of which cases had had acute rheumatism. A murmur disappearing on recovery existed in 14 cases. He cautions clinicians against mistaking vague pains for rheumatism.

Leroux³ finds on an analysis of 80 cases 5 with rheumatism—that is, 6¼ per cent.; a mitral murmur in 5, only 1 of whom had had rheumatism, anæmic murmurs in 8.

Steiner, out of 252 cases, finds only 4 in the course of rheumatism, and thinks the difference in statistics must be due to the nationality.

Rhomberg and Grisollo considered rheumatism and heart disease as accidental complications of chorea.

Niemeyer⁴ considers the connection between rheumatism and chorea not constant, but states that certainly many cases of chorea have had rheumatism. Certainly, also, heart murmurs often follow rheumatism, even after deducting those due to anæmia and disturbances of nutrition, often enough to determine an endocarditis complicating rheumatism.

Strümpel⁵ states that although the statement of certain authors that almost every case of acute rheumatism in children is followed by chorea is far too strong, yet the sequence is comparatively frequent. Chorea is often seen with mild chronic rheumatism, or in valvular cardiac disease with or without rheumatism.

¹ Practice of Medicine, 1873, p. 742.

² Lancet, Dec. 21, 1889; Archives of Pædiatrics, July, 1890.

³ Rev. Mens. des Malad. de l'Enf., Juin, 1891.

⁴ Pathologie und Therapie, vol. ii. p. 411.

⁵ Text-book of Medicine, 1887, American translation, p. 739.

Sée found 61 in 128 cases who had had articular rheumatism, but in only 32 were signs of rheumatism undoubted—that is, 37.65 per cent. doubtful, 25 per cent. certain.

Sturges¹ states that there were only 20 in 100 at the utmost; counting doubtful cases, and in these the rheumatism was the immediate cause in only 3 or 4—that is, 20 per cent. doubtful.

Money,² out of 214 cases, found rheumatic fever in 33, rheumatism in 23, doubtful in 9—that is, an undeniable rheumatic history in 16 per cent., possible in 29 per cent.

Ross³ mentions rheumatism as one of the most frequent and important causes of the disease.

Gowers⁴ finds 24 per cent. of rheumatism, and says that heart disease may follow or precede chorea. He finds cardiac disease in three-fourths of the cases where rheumatism existed, and in one-third of those without—that is, in 43 per cent. of the cases altogether.

Ziemssen⁵ found 6 cases of rheumatism in 25—that is, over 25 per cent., and draws the conclusion from these observations and those of Copeland, Senhouse, Forgous, Bright, Babington, Hughes, Monekton, Hillier, Romberg, Trousseau, and others that there is a close relationship between chorea and rheumatism.

Senhouse, Heslop, and Roger held that chorea and rheumatism, pericarditis and endocarditis were common expressions of the same pathological process, Roger considering that chorea appeared generally at the decline of the rheumatism.

Perhaps one of the most complete additions to these statistics is that of the committee of investigation from the British Medical Association, the report of which was prepared by Mackenzie, based on 439 cases, resulting in a percentage of 26 per cent. with rheumatism.

Goodall,⁶ in an analysis of 262 patients, found 65 cases of systolic, non-organic apex murmur, 33 cases of systolic mitral regurgitant murmur; of which 33 cases 22 had had rheumatic fever. He found 4 cases with similar results together with pericarditis, 3 of which cases had had rheumatic fever; 13 cases of mitral stenosis, 2 of which had had rheumatic fever; 1 of aortic stenosis, with no history of rheumatic fever; 2 cases of double aortic disease, 1 with mitral regurgitation, and 1 with mitral regurgitation and pericarditis; 4 cases of pericarditis without valvular lesion, 3 of which had had rheumatic fever; 10 cases of systolic basic murmur, probably hæmic; 1 case of loud systolic universal mur-

¹ *Lancet*, 1878, vol. ii., p. 283, and 1879, vol. ii. p. 789.

² *Brain*, 1882 and 1883, vol. v. p. 512.

³ *Diseases of the Nervous System*, 1883, vol. ii. p. 768.

⁴ *Ibid.*, 1888, p. 959.

⁵ *Pathologie und Therapie*, B. xii., H. 2, S. 443.

⁶ *Guy's Hospital Reports*, London, 1890.

mur, with a history of rheumatic fever—that is, 55 cases of valvular organic disease. There were 42 cases of fright; in 5 of these rheumatic fever had existed; 3 cases of imitation, 2 of which had had rheumatic fever; and 8 cases came on very soon after a fall or head injury, 1 of which had had rheumatic fever. There were 10 cases of chorea of pregnancy, 7 of which were married.

We find opinions varying, therefore, all the way from the view that the coincidence of these diseases is mere accident, to that considering them expressions of the same pathological process. Reverting to figures, we find recorded percentages varying all the way from 6 per cent. to 26 per cent. of rheumatism preceding chorea, and of heart disease from 13 per cent. (Syres) to 43 per cent. (Gowers).

It is apparent that no one set of statistics will decide this question, but that many more series of cases must be taken, and that the evidence must finally be carefully weighed, not only as regards quantity, but quality.

The contribution which we would offer toward this end is the careful analysis of 76 cases which we have seen in conjunction during the past two years, most of them at the Massachusetts General Hospital. The number might have been greatly increased had we depended upon cases seen separately, and even have been swelled to over 500, had we trusted to the records in the neurological and general out-patient departments of the Massachusetts General Hospital. We have chosen, however, to place accuracy before numbers.

As regards the neurological branch of this investigation, "habit chorea" was carefully excluded, as well as the choreic movements of hysteria, and those of gross organic disease of the brain—*e. g.*, post-hemiplegic. As regards the investigation of the heart, great pains were taken to distinguish between functional and organic disorders. Weight was not laid upon any single sign exclusively, but the diagnosis was based upon the entire group of objective symptoms—the size of the heart, the presence or absence of a thrill, the location of the murmurs heard and the direction in which they were transmitted, the accentuation or non-accentuation of the pulmonic second sound, and the evidences of venous stasis.

As regards the question of rheumatism, vague pains were not included under rheumatism, even when situated in the joints, but a history of "pain, heat, redness, and swelling," was carefully sought, and only those cases included under rheumatism where the history was sufficiently accurate to render probable the existence of true rheumatic inflammation.

In these 76 cases 36 were found to have no possible history of rheumatism and no question of cardiac disease, either functional or organic—that is, 47.37 per cent. There were found to have had rheumatism

without heart disease only 3—that is, 3.94 per cent. Of organic heart disease without history of rheumatism, were found 11 (14.47 per cent.); of both heart disease and rheumatism, 10 (13.16 per cent.); of functional heart disorder 11 (14.47 per cent.); of rheumatism with irregular heart, 5 (6.58 per cent.); of vague pains without rheumatism, 13 (17.10 per cent.). (Out of these 13 cases 3 had organic, 1 inorganic, 1 doubtful heart disease, and the remainder no question of heart disease, being, therefore, also included under these headings.) Two cases had doubtful rheumatic history, and 2 questionable heart disease. One of the cases of organic heart disease was probably congenital.

The total percentage of rheumatism from these statistics is 23.68—closely coinciding with the results of Gowers, Ziemssen, and the committee of the British Medical Association.

The total percentage of organic heart disease is 27.63.

Taking, now, all authorities together, and adding our own observations, we are in position to consider what facts are established, and what are still doubtful.

I. There can be no doubt of the fact that chorea *may* arise without suspicion of either rheumatism or cardiac disease, either functional or organic. Even Hughes and Bennett allow an estimate of 15 out of 104, a proportion which seems low at first sight, but which is by no means startling when we realize the frequency of inorganic heart murmurs in this affection due to anæmia, as well as the frequency of cardiac irregularity resulting from the chorea itself. We have ourselves found over 47 per cent. in which neither rheumatism nor heart disease, organic or functional, existed, nor had existed as far as known; and even if cases of vague pains should be included under rheumatism, the proportion would only be reduced to a little under 40 per cent. These cases, taken together with many authenticated instances of chorea produced by fright or other emotional excitement without question of rheumatic or cardiac origin, lead to the establishment of the fact that neither of these conditions is essential to the production of chorea.

II. The preponderance of evidence up to this time points to the fact that both rheumatism and organic heart disease are found more frequently in the present or past experience of choreic patients than can be accounted for by mere coincidence. As stated above, we have found, out of 76 cases, a distinct history of rheumatic fever without heart disease in 3; with organic heart disease in 10; with inorganic heart disease in 5; and a doubtful history of rheumatism in 2—making a total of 18 quite certain (23 per cent.), and 2 doubtful cases—certainly a very large proportion for a coincidence.

It may also be said of the statistics of others, taken as a whole, considering the number of observers, the number of cases, and the quality

of the work, that the preponderance of evidence carries the average observation considerably beyond the limit of coincidence.

Again, in our 76 cases 11 had organic heart disease without rheumatism, in addition to the 10 already mentioned, in which they existed together, making a total of 22 with organic cardiac disease—again a large proportion for coincidence, as well as too many to admit of the supposition that the heart disease was a complication merely coincident to the rheumatism. In 2 more cases there was question of organic heart disease, and in 11 more inorganic heart disease existed without rheumatism.

Other authors have not furnished so exact statistics on the condition of the heart as on the question of rheumatism; but Gowers, above quoted, finds it present in three-quarters of the cases with rheumatism and one-third of the cases without, making a total of 43 per cent.—a still higher percentage than our own. As an example of a lower proportion may be noted Syres, quoted above, who finds 13.69 per cent. with structural cardiac disease and 43.8 per cent. with heart affection other than organic. But this proportion even exceeds the limit of coincidence, as, surely, not 13 per cent. of cases taken promiscuously from the records of children under hospital treatment for other diseases would be found to have organic heart disease.

Further figures upon this point are more needed than upon the question of rheumatism, but, on the whole, it seems to us that the proportion already gathered from the literature points in the same direction as our results.

Far from being biased in our investigation by previous statistics, it is only fair to say that we started out with a preconceived idea that, on the whole, the connection between these diseases had been considerably overrated, an *à priori* view which our facts have led us to modify materially.

Again, among the fatal cases of chorea, nearly all have been found, on post-mortem examination, to have organic heart disease.

Goodall found that in eleven fatal cases all had valvular disease of the heart.

Watson found that ten out of twelve fatal cases had organic cardiac disease.

The preponderance of evidence, on the whole, is in favor, then, of the theory that some connection exists between both rheumatism and heart disease, independently considered, and chorea.

The numerous cases in which the three affections have appeared in stormy fashion, either simultaneously or closely following one another, tend to show that this view is applicable to one class of cases, though not to all.

A single illustrative case may be adduced, seen by both the writers in consultation with Dr. F. B. Harrington.

CASE.—R. L., a girl, aged five years. A month ago was attacked with rheumatic fever, with swelling of the knees and ankles, and pain so severe as to prevent motion. Extreme dyspnoea supervened and rapidly increased. Prominence of the left thorax was soon visible. A few days later universal choreic movements appeared and became rapidly violent, affecting speech and deglutition. Examination of the heart showed a rapid, irregular, and feeble action, with enlargement of the area of cardiac dulness, a systolic and presystolic murmur at the apex, with presystolic thrill at the apex, and accentuation of the pulmonic second sound. In addition to these signs there was a harsh to-and-fro murmur along the left edge of the sternum, near to the ear of the listener, undoubtedly due to pericarditis.

Death ensued within a week; no autopsy was made.

This is a typical case of that form of chorea which terminates fatally, organic heart disease being found in the majority of such cases, as we have said. It is unfortunate that no autopsy could have been made on the central nervous system, but a sufficient number of autopsies have been made, in such cases, to render it extremely probable that organic changes (emboli) were present in the brain.

This brings us to the question—granted a connection between these diseases—What is its nature, and, in general, what is the pathology of chorea? Is any one pathological theory applicable to all cases, as many authorities have endeavored to show?

Among the changes found in fatal cases may be mentioned—*a*, emboli, varying from minute and scattered to those of appreciable size, in the cerebrum, more particularly in the gray matter of the cortex and basal ganglia (Gray, Elischer, Broadbent, Tuckwell); *b*, hydrocephalus; *c*, meningeal hyperæmia; *d*, hemorrhages; *e*, softening; *f*, hyperplasia of connective tissue and proliferation of nuclei; *g*, alterations in the vessels and perivascular regions; *h*, perivascular infiltration in the medulla and pons, with slight hemorrhages (Nauwerk); *i*, dilatations of minute arteries in the brain and cord, especially in the corpus striatum and thalamus, with hemorrhages (Broadbent); *j*, degeneration of cortical cells (Meynert); *k*, degeneration of nerve elements in the corpus striatum (Elischer).

Changes have also been found in the spinal cord and peripheral nerves;¹ not, however, with a sufficient constancy to draw our attention from the brain as the principal seat of disturbance, more particularly those portions of the brain composing or surrounding the motor tract.

Let us now review briefly some of the theories of the pathology of chorea.

Kirk supposes that inflammatory products from the cardiac valves,

¹ The experiments of Legros and Onimus, in 1870, pointed toward a spinal origin in dogs; such observations have not received sufficient confirmation to affect materially the above conclusion.

mingling with the blood, disturb the functions of the central nervous system. This is somewhat vague, and it would seem rather that, in such case, some definite lesion in the vascular system, multiple perhaps, but tangible, must be produced by these inflammatory products, especially when we remember the unilateral nature of the chorea frequently associated with cardiac disease, not only the choreic movements involving one side, but also the paresis.

Broadbent¹ considers the choreic movements due to widely spread hyperæmia of the nervous centres; of this we have no more evidence than we have that persistent anæmia produces the incoördinate movements by lowering the vitality of the cerebral cells.

The same author mentions the suggestion that hyperæmia with capillary blood stasis or capillary thrombosis by cohering leucocytes may be accountable for the disturbance, but neither blood stasis nor thrombosis is a constant condition in chorea.

Again, it has been suggested that prolonged arterial spasm from persistent reflex irritation (uterus or intestines) may lower the functional vigor of the ganglia. This theory is allied to the vasomotor theory of hysteria, and has a certain plausibility, but is, of course, purely conjectural.

Joffroy² considers chorea a cerebro-spinal neurosis of development, or disease of growth. He says: "It is to the nervous system what chlorosis is to the vascular."

Gowers inclines to the old theory that a morbid state of the blood, probably chemical, produces both endocarditis and chorea—a state probably allied to that producing rheumatism. Of the mechanism by which the abnormal blood state produces chorea, he states, we are ignorant, but he considers that a certain receptivity of the central nervous system is an essential prerequisite.

Koch considers chorea an infectious disease, and states that the choreic virus may produce either rheumatism or choreic endocarditis.

Sturges supposes a purely functional pathology, an activity in excess of the stability of the nervous system—in other words, lack of establishment of the lines of resistance.

J. Lewis Smith lays stress upon intestinal and uterine disorders, as well as upon anæmia, the "neuropathic state," as fright and imitation among the causes of functional chorea, but also considers rheumatism and heart disease important factors, and calls attention to the fact that organic heart disease may exist without murmurs.

The effort among most authors seems to be to adapt one explanation to all cases. But are the comparatively few fatal cases to fix the path-

¹ Quain's Dictionary of Medicine, 1889.

² Sajous's Annual, 1889.

ology for all forms of the disease, and are we to assume, as suggested by Ziemssen, that in the milder cases a minor degree of the same pathological process exists? and conversely, are we to assume that all cases are functional? The former supposition seems hardly satisfactory when the comparatively mild course of the average case under arsenical treatment is considered. In the Nervous out-patient department of the Massachusetts General Hospital, where this treatment is pushed in practically every case from the outset, among the extremely numerous examples of this disease it is rare to find a case severe enough to furnish the students a satisfactory illustration of the subject. Just how arsenic should dispel such serious pathological conditions as above mentioned, it is difficult to understand. Nor, again, does it seem quite satisfactory to suppose the change in fatal cases is a purely functional one. It seems rather that we must recognize two quite distinct classes of this disease, the one with a definite organic basis, the other functional.

As regards the mechanism of the abnormal mobility we are, as Gowers states, still in the dark, and it is perhaps premature for anyone to offer conjectures at this stage of our knowledge. We shall certainly make no endeavor in this direction.

That the disease may, in certain cases, be purely functional is rendered more than probable by the universally recognized cases of chorea appearing during the event of menstruation, and recurring at childbirth; again, by the cases, to which allusion has already been made, produced by fright or trauma. In the former cases the process is probably purely reflex to uterine disturbance, in the latter set up by psychical irritability without organic change. In many of these cases the thought would suggest itself that choreic movements, like infantile convulsions, migraine, and other functional disorders, may be often purely reflex—a symptom rather than a disease. This idea has been carried to an extreme by Stevens, and others who have followed him. This author apparently regards most cases of chorea, as well as epilepsy and migraine, as secondary to eye-strain. While the clinical results of treatment have not established this view, and while from an *à priori* standpoint it might be questioned whether the irregularity of action of the ocular muscles were not rather, like that of the cardiac muscle, a result rather than a cause of chorea, certain cases have undoubtedly been relieved by proper ocular treatment, as Dr. Cheney has also shown.

The abandonment of this view as extensively applicable does not, however, preclude the idea that chorea may be often reflex, though not merely to eye-strain. Persistent hiccough, convulsions, vomiting, and other symptoms of cerebral irritability, are recognized as often reflex to disease of other localities, and, to recur to the question of rheumatism, the idea advanced by Dr. Cheney, that chorea may possibly be set up sometimes as a reflex to joint disease, is worthy of consideration. In early

life, before the adult inhibitory processes have become established, comparatively slight irritation in certain localities certainly suffices to produce marked cerebral symptoms, and it is not impossible that the joints may prove to be among these localities. In fact, a certain alliance between rheumatism and functional nervous disease has long been recognized. The tendency for both affections to occur in the same family has been pointed out, especially by Feré. Some authors have called attention to the cerebral symptoms not infrequently associated with rheumatism, and the term cerebral rheumatism has even been applied by some clinicians, though the writers would by no means commit themselves to a belief in such a condition as a distinct entity.

The atrophy of muscles, frequently associated with rheumatism, should not be forgotten, as pointing to a neuropathic element in this disease; this atrophy being, as Strümpel first pointed out, far too marked to be explained by mere disuse—the term joint-atrophies, proposed by this writer, having been now universally adopted.

Again, the rapidity with which rheumatism changes its location, points to a nervous element in its pathology.

The objection to the theory of joint reflex is that the chorea generally appears as a sequel to, rather than during the attack of rheumatism. It is not impossible, however, that rheumatism and chorea are manifestations of the same neuropathic tendency.¹

Assuming the possibility of chorea as a reflex to rheumatic inflammation, shall we also suppose a reflex chorea may be dependent on organic heart disease? for we have still a large proportion of cases where heart disease existed without rheumatism—too large a number, as we have already stated, to be explained by mere coincidence. This can hardly be regarded as probable. It is far more probable that those cases where organic heart disease alone exists should be entirely removed from the question of reflex causation, and classed either among the cases with probable organic cerebral basis in varying degree—that is to say, emboli and other vascular disturbances, or among those where depletion of blood produces weakness and irritability of cerebral nerve-cells.

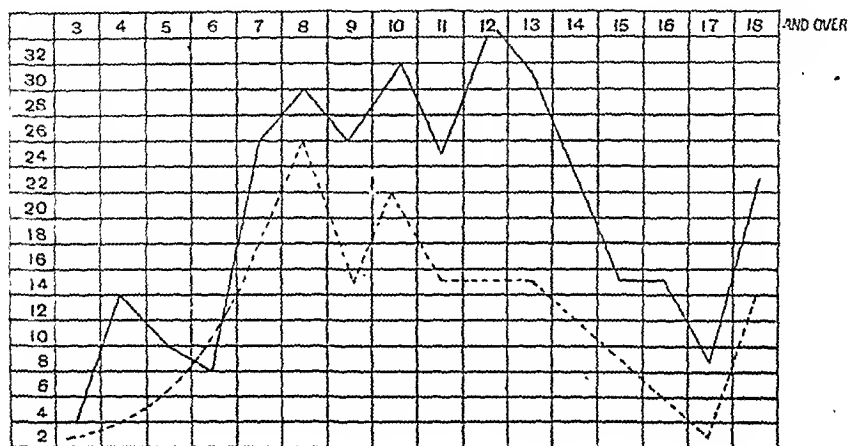
The preponderance of female patients, both during the advent of menstruation and throughout adult life, certainly points to a functional origin, in a large class of cases, at least. Koch finds, for example, 167 females to 100 males (three to two). Gowers finds over five to two in a collection of 1365 cases of his own and others. Broadbent finds chorea more than twice as frequent in females as in males, especially after the age of nine. Goodall finds 188 females to 74 males (five to two). Our own statistics on this point, taken from 490 cases in the records of the

¹ M. F. Cox : *Sajous's Annual*, 1890. Duckworth : *Liverpool Med.-Chir. Journal*, July, 1891.

Neurological department of the Massachusetts General Hospital, shows 300 females to 190 males, or about three to two—closely approximating the observations of Koch.

The following chart is instructive in connection with the question of chorea as a reflex. This chart represents the comparative ages of onset of chorea in boys and girls—taken from the 490 cases already mentioned. From this it is evident that the maximum age in boys is between seven and eight, the line falling rapidly from this point.

The dotted line represents males; the continued line, females. The ages are at the top, the number of cases at the left. In girls the line



continues high until the age of twelve to thirteen, then falling, there being twice as many girls at the age of thirteen as boys, whereas the number at eight is the same in both boys and girls. This would point to the fact that the additional number of cases in girls, as compared with boys, is due entirely to those arising during, or after the age of puberty. It is also worthy of note that many more females have chorea in adult life than males. According to our statistics, there were 22 cases of chorea occurring at eighteen or over in females, 13 in males; this proportion being greater than that of the absolute number of females to males, which was three to two. A similar chart may be made from the cases of Goodall, previously quoted, although the maximum age in boys was ten in Goodall's results, instead of seven to eight, as in ours. The curve in Goodall's cases, however, rises rapidly from ten through twelve in females, whereas it falls directly from ten in males.

CONCLUSIONS.

1. Neither rheumatism nor heart disease is essential to chorea.
2. The preponderance of evidence points toward the conclusion not only that rheumatism and organic heart disease conjointly appear more fre-

quently in the choreic subject than can be accounted for by coincidence, but that the same is true of each of these affections separately. It follows, therefore, that (*a*) rheumatism predisposes to chorea, and (*b*) organic heart disease has the same tendency.

3. (Drawn from the observation of others.) Fatal cases are generally associated with organic heart disease, and probably with organic disease of the central nervous system (notably cerebral emboli).

4. There is a large class of functional cases—largely reflex, and fostered by circumstances tending to produce functional symptoms in general.

5. The pathological connection between rheumatism and chorea, excepting in the cases where emboli are produced by accompanying endocarditis, is still obscure; probably no one theory is applicable to all cases.

6. The mechanism by which the peculiar phenomena of chorea are produced is unknown.

UNUNITED FRACTURES IN CHILDREN.

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THE subject of fractures is one which has always had a peculiar interest for American surgeons, and the literature in connection with it is therefore very extensive. As I do not find that any surgeon has paid especial attention to ununited fractures occurring in children, I have thought it worth while to put a few notes together, which I hope may prove useful as well as interesting to those surgeons who are attached to children's hospitals, or who are otherwise brought into frequent contact with children who have sustained injury.

Ununited fractures are undoubtedly rare in children, but nearly every surgeon who has much to do with the treatment of the surgical diseases of children can probably recall one, or perhaps more cases of non-union which have come under his notice. Some of them have been published in the various medical periodicals of the world, and I have recently been at the trouble of collecting and tabulating some of the more accessible.

In the unrivalled collection of cases of ununited fractures compiled by Dr. Frank Muhlenberg, and published in the first volume of Professor Agnew's *Principles and Practice of Surgery*, no less than 685 cases are recorded and analyzed. This table includes pseudarthrosis met with at all periods of life, and amongst them I find 28 cases occurring in children under ten years of age. Sir James Paget¹ records 3 cases which

¹ Studies of Old Case-books, London, 1891, pp. 130-135.

came under his own observation. From other sources I have been able to collect, more or less, full particulars of 40 cases, so that the total number which I have been able to gather together is 71.

This table I have recently had the honor of laying before the Fellows of the Royal Medical and Chirurgical Society of London, but it is too long to reproduce, and I will therefore only state the general conclusions which I deduced from it. Of the 71 cases, 7 occurred in the clavicle, 9 in the humerus, 12 in the femur, 42 in the leg, and only 1 in the forearm—a result which is very surprising when it is considered that statistics show the forearm to be more often broken than any other bone in a child's body. Ununited fractures are a little more commonly met with in girls than in boys; they are equally frequent on the right and left sides of the body. The most unsatisfactory point in connection with ununited fractures in children is the frequency with which all operative measures fail to effect union. Thus, of the entire number of 71 cases, firm bony union was only obtained in 6 children, whilst of the others some remained in their former condition, some received slight benefit from a very prolonged and often hazardous course of treatment, whilst others, as was too often the case, underwent that “opprobrium of surgery,” amputation, in order to be relieved of a limb which was worse than useless.

It is important, therefore, to ascertain the causes which appear likely to lead to this condition, because, although everyone recognizes how often broken bones are met with in children, it does not seem to me that they quite realize the ease with which these injuries may be overlooked, without any blame attaching to the practitioner; and, when they are overlooked, how disastrous may be the results of such an error in diagnosis.

The cause of the non-union of fractures in children is always local, and is, I believe, want of rest.

The want of rest may be due to a variety of causes, which may be classified in the following way:

1. *Errors in diagnosis.* In children there are many causes which may lead to difficulty in diagnosing a fracture. In the first place, infants may be born with one or more of their bones broken. Mr. Thomas Smith related an interesting example of such a case to the Fellows of the Royal Medical and Chirurgical Society of London.¹ It occurred in the fifth child of perfectly healthy parents, who could never assign a precise cause for the condition. The mother was accustomed to have very tedious labors, but in this instance there had been unusually violent action of the uterus, followed by prompt expulsion of the child early in the course of labor. The baby was brought to Mr. Smith

¹ Proceedings, vol. iv., 3d series, p. 41.

within a day or two of its birth, and on examination all the long bones were found to be broken, so that the least movement of its body caused a grating sensation. As it could not be dressed, it was swathed in Gamgee's dressing, and placed in a sort of tray moulded to its shape. All the fractures united within six months except that of the right femur. This is, of course, an extreme case of congenital fracture, occurring either during or immediately after labor. Similar instances, however, where only a single bone is injured are of no infrequent occurrence. As may easily be imagined, if such a child is entrusted to a nurse of the ordinary type of midwife met with in the country, such an injury is almost certain to be overlooked, with the disastrous results to which I shall presently call attention.

There is another class of congenital fractures which is very liable to be overlooked even when an examination is made by a highly skilled person. In this class of cases the fracture has occurred subperiosteally, or may be of the ordinary green-stick type. Admirable examples of both these classes are preserved in the museum of the medical school attached to the Westminster Hospital. In these cases dissection alone would reveal the injury, and there is no doubt that under ordinary circumstances they would readily be repaired. If, however, the child were to be neglected, or roughly handled, the periosteum might readily be torn through, or the green-stick variety might be rendered complete, when in both cases an ordinary fracture will occur. In such a child, too, the violence necessary to produce this result might be so slight that the fracture might be truly called spontaneous.

In fat children, again, a green-stick fracture is especially liable to be overlooked by the mother and the doctor, and it is probably not recognized until the production of callous a week or ten days after the injury renders it obvious. It appears from an examination of cases that such cases of unrecognized fractures being allowed to go about without restraint give rise to a certain proportion of the ununited fractures met with in children.

2. *Carelessness* on the part of the child's attendant appears to be a factor in the causation of ununited fracture. This carelessness is usually manifested by delay in calling for skilled advice; this may be from simple callousness, as occasionally seen amongst the class of patients who frequent the out-patient rooms of hospitals; more often, however, simple inattention is the cause of the delay. The child is sent out under the care of a small nurse, who either drops it, or allows it to damage itself in some other way, and is afterward too frightened to tell the mother on her return home. The mother notices that the child is peevish, but attributes its irritability to general rather than to local causes. If she is unusually observant, she brings the child to the doctor in a week or ten days' time, saying that it has "a lump," and this on examination proves

to be callous, marking the seat of the fracture. If this happens when the fracture repairs, it must, of course, be equally frequent in cases of non-union, and, indeed, in looking through the histories of such cases I have been struck with the constant repetition of the phrase, "The fracture remained for a time untreated," or, which is nearly as common, "It united in bad position, and was subsequently refractured and put up straight, when it failed to unite," in both cases showing that proper care was not taken from the beginning. Carelessness on the part of the parent is often the result of mere ignorance of the simplest laws of domestic surgery, and it is therefore well to give a little simple advice in every case of fracture which is brought under one's notice. In an ideal state every broken bone would be treated under the immediate and constant supervision of a surgeon, but in a large town this is impossible, nor can every child with a broken forearm, or clavicle, or tibia be taken into a hospital. It is well, therefore, to warn the mother after the injured limb has been securely put up in a plaster case or in splints that she must herself look after the child, and see that the apparatus does not loosen, and, in the case of the leg, that the child is not placed in a high-chair and allowed to dangle its legs. In such a position the two fragments are very soon able to work upon each other with the hinge movement, which Hamilton has shown to be so common a cause of non-union after fracture.¹

In some cases, too, I am afraid that the medical practitioner cannot be entirely acquitted of all blame. He should remember that it is his duty not only to fix the broken bone, but also to see that the two ends remain fixed. In a fat child and in a restless child it is often extremely difficult to maintain the two fragments in motionless apposition. He should therefore see the child more frequently than is usually necessary in a fracture occurring in an adult, and especially during the second week. A fat child who is confined to bed, or whose movements are restrained, wastes very rapidly, so that bandages or plaster-of-Paris cases, which were at first quite sufficient to render the fragments immovable, very soon require readjustment. This readjustment, however, must be done with discretion, since there is nothing so fatal to the satisfactory repair of a fracture as constant and needless meddling with the retentive apparatus.

In some cases, too, it would seem as if the surgeon went to the opposite extreme, and simply left the fracture to take care of itself; this mistake is most commonly made in connection with a broken collar-bone, and is, perhaps, one of the reasons why so many instances of non-union are recorded in this bone. Such an error in treatment is also made when a green-stick fracture of the humerus, of the radius, or of

¹ A Treatise on Fractures and Dislocations, London, 1884, pp. 284-288.

the ulna is treated by the simple application of a sling. The child is taken home, allowed to crawl about, and the green-stick fracture is very probably converted into an ordinary fracture before the surgeon again sees it.

Prof. Agnew¹ points out that in children the line of fracture is more often transverse than in adults. This point, if true, is of great interest, for it is obvious that it is much more difficult to keep the two ends of a transverse fracture in apposition, than one in which the fracture was oblique. In a transverse fracture the ends would either meet or they would not meet, whilst in an oblique one some part of the ends would be sure to overlap.

The treatment of fractures in children, then, resolves itself into the following common-sense rules: Diagnosticate the fracture as early as possible, and in every case keep the fragments in perfect apposition. After the fragments have been secured, see that the apposition is maintained by exercising careful supervision, and, when necessary, by the readjustment of the retention apparatus. As in cases of adults, so in children, the most successful treatment of fractures depends upon attention to details. In cases where non-union has occurred the prognosis in regard to subsequent union is very bad. In such cases the ends may be resected, and the fracture treated by securing perfect immobility of the bone for a long period. If, however, there has been much wasting of either end, it will, I think, be found that resection is useless. In the bones of the upper extremity the resulting fibrous union, judiciously aided by a light artificial support, will occasionally enable the patient to pass his life in tolerable comfort. Under similar circumstances in the lower extremity, however, it will often happen that amputation alone affords the patient relief from his miserable condition.

STREPTOCOCCUS OSTEOMYELITIS IN CHILDREN.

BY HENRY KOPLIK, M.D., AND W. W. VAN ARSDALE, M.D.,
OF NEW YORK.

I. ETIOLOGY.

BY HENRY KOPLIK, M.D.

(Concluded from page 433.)

ANIMAL EXPERIMENTS.—The animal experiments with the streptococcus which was found in all the cases reported in this paper, were limited to the study of the effects upon white mice and rabbits. The effect of an injection of a pure culture in bouillon of the streptococcus

¹ Op. cit., vol. i., p. 946.

into the subcutaneous tissue at the base of the tail of the white mouse was that, after a few days, the animal invariably died. Death was preceded by symptoms of somnolence or dyspnoea; some of the animals presented a peculiar paresis in one or the other posterior extremity. The animals would drag the affected and relaxed extremity after them in running. This symptom appeared late. None of the joints in the paretic extremity were inflamed, so that I am not prepared to state the exact cause of this paresis. Autopsy upon the mice did not reveal anything but an enlarged spleen. Streptococci could be cultivated from the blood of the animal. It showed the same culture characteristics as the injected microbe. The organs (spleen and kidneys) showed, when hardened and stained, streptococci in masses, occluding the bloodvessels in various parts of the organ, especially in the pyramids, similar to what was seen in the rabbit. Streptococci were also found in the tufts and bloodvessels between the tubes of the cortex. There were no macroscopic pleuristics, peri- or endocarditis, or joint affections. The kidney epithelium was cloudy and swollen, as in the rabbit. The animals died of a species of septicæmia due to streptococci.

Rabbits. If a few minims of a bouillon culture of the streptococci were injected into the skin of the ear of a rabbit, nothing followed except an inflammation of the skin of the ear. The ear was thickened and red, the redness spreading toward the base of the organ; the ear hung over the head of the animal, but the general condition of the animal continued good after the first few days. The inflammation subsided without abscess, and the animal survived. Subcutaneous injection under the skin of the abdomen or back gave negative results. Injections into the skin around the joints gave negative results. Injections of pure cultures into the circulation gave invariable results. The bloodvessels along the borders of the ears were injected with a suspension of streptococci in bouillon, but after a few trials the spleen-tissue of the animals dying of such injection was rubbed in sterile bouillon, and the juice injected into the circulation of a healthy rabbit. The result was striking, and may be summed up as follows: Such animals after twelve hours were quite ill, refused food, crouched in a corner, did not move about, and evinced dyspnoea in shallow and rapid breathing. The posterior extremities in some animals seemed to be quite stiff; in some they were not moved even when the animal was urged to do so. They were held stiffly in contact with the abdomen, either both or singly. The joints in some of the animals—those corresponding to the shoulder, knee, small joints of the toes (claws)—became red, swollen, painful. In other animals there was no swelling, but when the joints were handled or pressed they seemed painful. The local wound at the point of injection, for the first few days became red; there was swelling and increase of local temperature. These symptoms spread over the whole ear, but

subsided after a few days, while the disease in the animal progressed; the animal died after a varying length of time as described in the histories. The autopsies upon these animals showed that the spleen was enlarged in all cases. The blood from the heart and spleen showed streptococci, which were cultivated pure. The most interesting macroscopic appearances were found in connection with the joints. The shoulder-joints, the knee-joints of the posterior extremities, the small joints of the paws were found in different cases swollen and filled with pus. This pus was creamy white, thick, and contained streptococci in pure culture. The heads of the bones making up such joints showed no gross change. The cartilages retained their original lustre, but in one case it seemed to have lost its normal gloss. There was no necrosis of bone nor subperiosteal swellings. The joints, which were not swollen but painful during life, showed when opened a thin, glairy, mucus-like substance, which adhered to the crucial ligaments in the knee. From this mucoid material (probably purulent) streptococci could be readily cultivated. The medulla of the bones corresponding to the inflamed joints was invaded with streptococci, which could be readily cultivated. The lungs, kidneys, spleen, and bones of the above animals were hardened and examined with reference to the presence of microorganisms.

Lungs: The lungs in some places were the seat of a broncho-pneumonia in minute areas. The walls of the medium-sized bronchi were infiltrated with small and large round cells, and the adjacent alveoli were filled with small and large round cells. Especial interest attached to the bacterial invasion. This was seen in the capillaries in the walls of the alveoli; the streptococci, in small masses and chains, seemed to be in the walls or on the inner surface of the bloodvessels. The vessels in the lungs were not plugged with streptococci, as seen elsewhere, but in the walls of the medium-sized bronchi large masses of streptococci existed, seemingly in the lymph spaces, also in the tissues of the lung. Minute chains of streptococci were seen between the endothelial cells of the alveoli, at times seeming as though in the cells themselves. It may have been that, being situated against the walls of a capillary bloodvessel, or in a lymph space, they shone through the cell and appeared as though situated in the body of the same.

Kidneys: The appearances in the kidneys resembled very closely those described by Babes in his work upon septicæmia in infants, and Baginsky in his report of autopsies upon cases of pyæmia in infants, similar to those of this paper. The bloodvessels of the kidneys, especially in the pyramidal portion, were found filled and plugged with masses of streptococci for considerable distances. In some places the bloodvessel presented simply a mass of micrococci, in other places separate chains were situated along the walls of the vessel. The vessels in the cortex which had been cut transversely were found plugged with strep-

tococci. The capillaries of the Malpighian tufts were also the seat of bacterial invasion. In the kidneys of the animals which had died of a species of marasmus with gradual emaciation, the bacteria were found more or less scattered in twos and threes, and in small chains here and there in the vessels. There appeared in these cases to have been produced a condition in which the bacterial thrombi had gradually broken down, and were washed away by the circulation. Those bacteria which were stained were all that had been left of an invasion *en masse*. These bacteria were with difficulty stained and easily decolorized. These things lead one to suppose that they might have been dead or inert. Streptococci could be seen in the uriniferous tubules in and between the cells. The epithelium of the tubules of the kidney was the seat of advanced degeneration. Whole tubules presented a cloudy appearance, the normal granulation of the kidney epithelium being absent. With picro-carmin stain the nucleus appeared as one red mass, broken up in some places into curious crescent forms or numerous irregular shapes. In other places the cell-body, devoid of nuclear stain, filled up the lumen of the uriniferous tubules in one cloudy mass. Irregular stains of small red particles here and there indicated nuclear remains. In the Malpighian tufts the endothelium of Bowman's capsule seemed to be piled up in layers of two or three cells thickness, topped by granular detritus, which did not stain, and pressed upon the bloodvessels. In short, the kidney presented extensive parenchymatous degenerations and bacterial invasion.

Spleen: The changes found in the spleen of the animals dying of injections of the above streptococcus were very constant and characteristic. The spleen in all animals was enlarged sometimes to four times its original bulk. It was quite firm and hardened well. In animals which had died with gradual emaciation the spleen was almost normal in size and appearance. Thin sections of spleen were stained with gentian-violet and picro-carmin. The invasion of streptococci was seen in the form of smaller or larger colonies scattered throughout the organ. Individual chains were seen among the cells of the pulp. The bloodvessels in places were plugged with streptococci. The most interesting changes found are those which, excepting the bacteria, correspond closely to what has been figured by Oertel as occurring in diphtheria. Throughout the spleen innumerable areas were found in a state of necrobiosis. They were best studied with fuchsin stain or simple hæmatoxylin. These were found scattered through the pulp areas, in the vicinity or the centre of which generally was a mass of streptococci (colony). Instead of the normal pulp of the spleen, there was found nothing but a mass of particles of most diverse shape; the small and large round cells seem to have disintegrated. Here are found most diverse pictures of spherical, semilunar, irregularly broken particles, which stain uniformly red

with fuchsin. There is little or no granulation to the structure of these particles. Then there are also large cells in which the nucleus is broken up into numerous particles of various shapes, or semilunar rings. These nuclear particles stain deeply, the cell-body very little, or not at all—its faint outlines alone can be seen. The streptococci are surrounded by granular detritus, the particles of which stain deeply and glisten when the focus of the immersion is brought upon them; between the necrobiotic cells we can see the spleen reticulum. On the outskirts of such an area a collection of irregular round cells, small and large, with irregular and deeply granular nuclei, can be seen. These areas are most numerous in the spleen, though they existed in the kidney also.

Bones: The changes found in the bones of rabbits which had died of streptococcus injection, and had also shown joint complication, were interesting. The medulla of the bone was completely invaded with streptococci; they were found in the bloodvessels and in small colonies studding the medulla, in the whole extent of the shaft of the bone, where it was not possible to say whether they were in the bloodvessels or not. Small and large chains were also found between the cells of the medulla. In the Haversian canals there were masses of chains and plugs of streptococci. In some of the bones at the junction of the epiphysis and diaphysis, the cartilage cells seemed to have become completely necrotic, the basement substance of the cartilage broken down; microscopic foci of tissue were found at such places which were necrotic. In the heads of the bones adjoining the affected joints, the cartilage cells appeared many to one capsule, some broken down; but it is difficult here to say what is inflammatory and what infarct. The cartilage basement substance was remarkably free from streptococci. In the cartilage so-called capsule near the cavity of the medulla the space around the cartilage cell showed what appeared to be small chains of streptococci. The cells of the medulla stained very badly, or not at all, with hæmatoxylin or picro-carmin. The whole tissue was uniformly hazy. Here and there were clusters of round cells stained with picro-carmin. The fat in places appeared in larger particles and greater clusters than we would expect to see in the normal tissue of the medulla. Nothing resembling a distinct sequestrum of bone was discovered in any specimen, though, as can readily be seen, the whole bone was the seat of active inflammatory changes. A piece of the trochanter major removed from Case I. at operation was found invaded with streptococci. The basement substance of the cartilage of the trochanter was fibrillated, had lost its homogeneous appearance, and minute areas made up of detritus and streptococci were seen. These areas adjoined the junction of the trochanter and the bone.

The radius, minus its epiphyses, which was removed entire from Case

III. at operation, was not destroyed for examination. Inspection of the bone at the upper end shows a worm-eaten appearance just below the neck of the bone; this is most apparent on the posterior aspect of the bone, and reaches as far as the mid-region; the medullary canal is exposed in places. The lower end adjoining the wrist is simply rough, but well preserved. There is no periosteum. There can be no question as to the process in question being osteomyelitis, and the specimen was preserved in its entirety for exhibition. Nothing further could be gleaned by microscopic examination.

Animals Experimented Upon.

Rabbit 1.—Injected in the skin of the ear with a pure culture in bouillon of streptococci obtained from Case II. In three days there was redness and swelling of the ear, spreading toward the root of the organ, with increased temperature; this redness subsided after a few days and the animal showed no other symptoms. The same animal was injected in the skin of the paws about the joints, and there was only a circumscribed local reaction.

Rabbit 2.—White, medium-sized animal, injected in the bloodvessels of the ear with a bouillon culture of streptococcus; this culture was only twenty-four hours old, and was transferred from agar. Animal died in twenty-four hours. Culture made from blood of heart and spleen pulp. The spleen pulp rubbed up in bouillon (sterile) injected into animal (4).

Autopsy showed very large spleen; streptococci in blood, nothing in joints, but a distinct redness of the head of the right femur, the acetabulum and ligamentum teres.

Rabbit 3.—Injected with a bouillon culture of streptococci obtained from Case I. The culture injected just as it was turning turbid (six-hours old). Twenty-four hours after, the rabbit seemed quite ill: The ear at puncture was red and swollen; after forty-eight hours, he crouched in a corner and seemed unable to move. When laid on his back will remain this way with hind paws drawn up toward the abdomen. When he hops, he does so very awkwardly, the whole body being raised after him; hind paws are moved very little. Ear at puncture, red and swollen. This condition persisted for twenty-four hours. After four days the left hind leg is drawn up toward the abdomen; animal is very ill; he does not move about, and the swelling of the ear has spread toward the base; died on the morning of the sixth day.

Autopsy: Rigor mortis; heart and lungs show nothing abnormal, but there is a fibrinous peritonitis, with adhesions between the coils of intestine. There was no great amount of pus in any joint, but the cartilages of the heads of the bones in the knee-joint were covered with a thin membranous deposit like fibrin, or muco-pus. The same was seen in the hip-joint. This fibrinous glairy substance, taken from between the crucial ligaments, was found to contain streptococci. The medulla of the long bones contained streptococci, as did also the blood and spleen juice and peritoneal exudate.

Rabbit 4.—White and gray, medium-sized animal, injected with spleen juice in bouillon of rabbit (2). The injection was made directly into the bloodvessel of the ear. On the third day the animal appeared very ill and lay crouched in a corner. The left hind extremity is drawn up toward the abdomen; the animal does not move; is very irritable. Ear inflamed and swollen at the root. This animal died on the fourth day after injection.

Autopsy: Suppuration of the right knee; pus thick and creamy. Left knee full of purulent effusion; more serous than the right knee. Pus in the right shoulder-joint. Pus in the right hip-joint. Spleen very large. Blood of heart, spleen pulp, pus of the joints, and the medulla of the bones inoculated into agar tubes; streptococcus obtained. Pulp of spleen re-injected into large buck rabbit.

Rabbit 5.—Small, black animal, injected subcutaneously with a bouillon culture of streptococcus obtained from the pus of joint of Case I. This animal at no time subsequent to this injection showed any ill effects of the same; did not die of the injection; was killed after a few weeks; nothing found.

Rabbit 6.—Gray, active, medium-sized animal, injected into the vessels of the ear with pus obtained from Case II. After two days the rabbit was not very well. The injected ear red and swollen, especially at the base. This animal became very ill and on the twelfth day the ear was much swollen and painful; the animal did not eat or move much, and crouched stiffly in a corner; breathed in a shallow but rapid way. This animal, however, recovered from the immediate effects of his injection; was able to hop about, but emaciated gradually and died with symptoms of toxæmia.

Rabbit 7.—Lively large buck rabbit; injected with spleen juice in vessels of the ear; spleen taken from rabbit (4), Case II. Became very ill and died the fourth day after injection. The animal had shown marked local reaction around the puncture in the ear; he had crouched in one corner; refused food. When turned over was quite stiff; did not at first extend paws. After a few attempts, put himself right again. Breathing shallow and labored.

Autopsy: Heart and lungs negative; spleen enormous in size. The knee- and shoulder-joints are the seats of suppuration. Pus covers the crucial ligaments and heads of the bones. The right shoulder is distended with pus. The left shoulder contains a small amount of purulent serum. Culture in agar made from the blood, spleen juice, and pus in joints, and after twenty-four hours in thermostat the usual delicate streptococcus growth obtained.

Rabbit 8.—Medium-sized animal; injected into the ear with a pure culture in bouillon obtained from autopsy pus of rabbit (7); died upon third day after injection. Left knee contains small amount of pus; no pus in the other joints, no fluid in joints. Spleen enormous in size; no difficulty in obtaining pure cultures of streptococci from the pus in joint, also from the blood and spleen juice.

Rabbit 9.—Injected in bloodvessels of the ear with a pure culture in bouillon of streptococci obtained from rabbit (3), Case I.; death after four days. The ear of the animal was much swollen; the spleen was very large; no pus in the joints. The blood of the heart, spleen, and medulla of the bones showed abundance of streptococci.

Rabbits 10, 11, and 12 received injections into the circulation of pure culture of streptococci in bouillon obtained from pus of the hip-joint in Case I.

Rabbit 10.—Medium-sized, white animal; injected into the vessels of the ear, died after four days with usual symptoms.

Autopsy showed sero-fibrinous peritonitis, large spleen. There was no pus in the joints, but an excessive amount of serum in right knee-joint. Spleen was very large. Streptococci in blood, spleen, and medulla of bones, and above serum of the joint.

Rabbit 11.—Medium-sized, white animal; injected at the same time as rabbit 10, with same culture; died on the eighth day.

Autopsy: Injected ear livid and swollen. The animal's hind paws are both œdematous and swollen; several small joints in the paws much swollen, distended. In all, five toes of the ten were affected. The subcutaneous tissue very œdematous. The affected joints are filled with a thick creamy pus; a few inguinal glands swollen; knee-, hip-, and shoulder-joints showed no pus, though containing a little more than the normal amount of serum. Spleen very much enlarged. Pus from the above joints contained streptococci, as did also blood of the heart and spleen.

Rabbit 12.—This animal, of medium size, was injected with spleen pulp of animal (10), rubbed up in bouillon. The animal was quite ill for a time. The ear showed marked reaction. There was the same stiffness of the posterior extremities. The left hind leg seemed worse than the rest, and was not moved. These symptoms subsided; the animal became much emaciated; and though the ear swelling had disappeared and the animal hopped about, the emaciation progressed. The animal died after three and a half weeks.

Autopsy revealed signs of old peritonitis, a few adhesions being found. Both knees and both shoulders showed an excess of synovia. Spleen was normal in size. Nothing could be cultivated from blood, spleen, or joint synovia.

Mice.—A number of white mice, twelve in all, were injected as follows: (a) With pure bouillon cultures of streptococci obtained from pus of Cases I. and II. (b) With crude pus from Cases I. and II. (c) With spleen pulp, rubbed up in sterile bouillon, of animals dying from procedures *a* and *b*. In all cases the result was invariable; only one animal of the twelve survived. The mice after two or three days showed a peculiar paresis, in some cases in the hind legs. I am not prepared to state the cause of this symptom. The injections were all made in the usual vicinity, at the root of the tail.

Autopsies revealed a large spleen, and streptococci in the blood and various organs. I will not detail individual experiments, as they were all similar and the result the same as already stated.

When the above work was in progress I was not aware of the work accomplished in this same direction by the French school. The invariable occurrence of a streptococcus in pure culture in all four cases, and in these cases the subsequent appearance of bone necrosis, led to the inevitable supposition that we had to deal with an acute infectious osteomyelitis, secondary to the invasion of the bone by a streptococcus, which, as far as investigations show, is indetical in biological behavior with the streptococcus pyogenes. We had decided before the work of Lannelongue and Achard had agreeably confirmed our theories, that we had to deal with a variety of acute infectious osteomyelitis to which the infant organism was peculiarly susceptible, and which in its own sphere played a rôle exactly the counterpart of that played by the staphylococcus later in life. In reviewing the above work, we find two cases of joint suppuration and bone involvement after probable umbilical infection, one following a severe scarlet fever and one in which a successful result was attained; the osteomyelitis appeared during the full progress of a broncho-pneumonia with chest effusion. A portion of this effusion was withdrawn from the chest at the time; no microorganisms were found in the serum withdrawn, and its injection into mice was followed by negative results. This may have been due to the absence or scarcity of microorganisms in the portion withdrawn. Another specimen would have enlightened as to the nature of the effusion, but it was decided not to disturb the patient a second time. All the cases belong to the so-called septicopyæmic class, and the most probable supposition in Case III. is that here the infection of the joints may have complicated a scarlet fever or a measles, in which the rash may not have been observed by the mother, or that we have to deal with a case following a pneumonia—a most likely complication. The animal experiments, performed as they were with a streptococcus common to and found alone in all of the cases, give us some interesting data. Not that we must insist that the animal and human disease are the same or peculiar to this streptococcus. Lannelongue and Achard have isolated streptococci

from diverse sources and obtained similar and more pronounced results. Löffler also injected streptococci of Fehleisen in a manner similar to that which he had pursued with his diphtheria streptococcus, and had produced similar joint suppurations. The streptococcus, and particularly the one isolated by others and myself in the above cases, is capable of producing in rabbits an acute infectious disease, and in some animals, not all, joint complications. French authors think that the amount of streptococci injected will tend toward yielding certain results, as necrosis of bone, if large quantities be injected. However this may be, there is no difficulty in establishing, in this acute infectious disease of rabbits as a result of streptococcus invasion, a distinct and characteristic response on the part of the bone tissue and joints. The regularity of this occurrence in these experiments leads me to suppose that the presence of streptococci in the structures of a bone are a menace to the integrity of the neighboring joints, and that, given streptococci in the bone marrow, an arthritis is almost certain to follow. We cannot explain the real nature of these cases by saying they are those of pyæmia. We must class the joints in the above experiments in the same category with the pleura, where we suppose an acute pneumonic empyema to result from a contiguous focus of involved lung tissue. No one will look upon the filtration of streptococci from the marrow tissue through the head of the bone by means of lymph channels as an improbable theory. Once in the joint the streptococcus creates a variety of accidents. The invasion of the whole organism *en masse* with streptococci is not necessary to the involvement of bones. A very small amount of infectious material may be arrested in any one bone and having been freed into the circulation from a streptococcus focus and lodging in a single bone, stop there. Such a bone might be involved to the exclusion of the rest of the osseous skeleton, as in Case III. Again, assuming that there was a continuous reception of minute and constant quantities of micro-organisms into the circulation, there might be produced an immunity of the organism against their action, except that in certain structures this immunity does not exist to a degree sufficient to prevent suppuration; the result is a monarticular suppuration, which, though it inconveniences the patient, leads to no necrosis, no destruction of the head of the bone. The adjacent bone may be the seat of active mycotic invasion, as in the animal experiments. These cases, I think, are osteomyelitic; their difference in severity from other cases may be accounted for by the presence of certain economic conditions which prevent multiple joint affections and general streptococcus destructive invasion. These monarticular joint suppurations are not simply catarrhal, nor do we explain by saying they are pyæmic. They are osteomyelitic, just as much as those joint suppurations in which wide destruction of bone tissue results. The monarticular joint suppurations, or those cases

where the joints at both bone extremities are involved, as in our case, must be classed with those severe and fatal cases in which many joints are involved and the patients die, both of exhaustion and toxæmia. They are all cases of osteomyelitis secondary to streptococcus invasion of the bone tissue. Such a streptococcus may have been present in the primary disease (scarlet fever, measles, diphtheria, etc.) as an accident—a so-called mixed infection. Once its invasion into the economy is inaugurated, we receive clinically pictures of greater or lesser severity, depending on laws to which the economy must conform in the presence of any infectious disease.

The favorable prognosis of the monarticular cases rather influenced most authors in discarding the possibility of an osteomyelitis as a causative factor. An osteomyelitis may, as any other infectious disease, be of various grades of severity. The German and French schools have shown that any portion of a bone, the epiphysis or the diaphysis, or both, may be the seat of disease. Any mycotic invasion of a bone or part of its structure is an osteomyelitis. It is not necessary in all cases of osteomyelitis to obtain foci of necrosis of bone. We can, as in the animal experiments, conceive of a stage of the disease in which, though an invasion of the bone marrow and bone tissue with streptococci is general and in active progress, necrosis is far from being one of the leading factors in the existing inflammation. These conditions must be explained in a great measure by the theories of the acquired and natural immunity of the human economy against disease. Some patients present to the invading organisms, whether in the vital fluids produced in the tissues or inherent in them (Virchow), or the serum of a circulating fluid, the blood (Buchner), or peculiar properties of the white blood-cells (Metschnikoff), peculiar phases differing in every individual. In this way a microorganism in one person may produce certain effects; in others it may stop short far from such effects. The virulence or the lack of this property in a streptococcus will not explain everything in connection with monarticular or multiarticular joint suppurations. Every microbe, virulent to a greater or less degree, must also meet in the economy complicated conditions favorable to its growth or tending to its limitation and destruction. Theories like the above always must have the fate of refutation and opposition, yet it seems the most plausible to offer, as being in accord with advanced knowledge and experiment. The acute suppurative arthritis of infants and children included in this paper is due to an acute infectious osteomyelitis. This osteomyelitis may be secondary to the infectious diseases (puerperal fever, scarlet fever, and exanthemata, diphtheria, pneumonia), and is due to a streptococcus for the present closely resembling the streptococcus pyogenes (or that isolated by Löffler in diphtheria). This osteomyelitis need not be accompanied by bone necrosis in the very mild cases, and

may be linked with or manifested by acute suppuration in one joint only. The bone and joint may in these cases be completely restored to the normal state. Two joints at both bone extremities may be involved with destruction of the intervening bone. Wide streptococcus invasion, gradual or rapid, may meet conditions in the organism favorable to the causation of destructive osteomyelitis in several bones, multiple suppurative arthritis, and gradual death of the patient, with symptoms of exhaustion and toxæmia.

NOTE.—The experimental work was performed in the Carnegie Laboratory, New York.

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II. THE SURGICAL TREATMENT.

BY W. W. VAN ARSDALE, M.D.

THE class of cases to which reference has been made in the first part of this paper is clinically so discouraging to the surgeon to whose lot their treatment falls, that it is not surprising to find many surgeons of the opinion that operative interference of any kind is hopeless from the first.

We have all of us seen these cases brought into the clinics with the marked pallor, the great prostration, the low fever indicative of septic intoxication, and the multiple joint abscesses, which stamp them from the first as beyond the reach of successful surgical treatment. And if we have been led by a sense of duty to fulfil the most obvious indications as to surgical interference, and have given exit to the pus in the affected joints, we have done so with a sense of the uselessness of the procedure, and in the face of a bad prognosis given to the parents of the child.

In the cases narrated in the first part of this paper it was my fortune to see the little patients in consultation from the first, and the treatment of the earlier cases was conducted upon general surgical principles, rather than founded upon any certain line of ideas based upon an intimate knowledge of the pathology of the conditions underlying the disease.

And had it not been that one of these cases was saved, as I believe, by an interference of a somewhat desperate nature, suggested by the laboratory experiments with the cultures from the former cases, and done with the aim to strike at the root of the evil, I should not have felt justified in presenting this subject.

It is understood from the facts brought out by my colleague in the first part of this paper that the cause of the disorder in all of these cases was the pyogenic streptococcus, which, from localizations in the bone marrow of the larger bones, produced the joint suppurations as secondary affections; so that we are enabled, in view of the pathological facts found, to specify the cases as cases of streptococcus osteomyelitis affecting the joints, instead of speaking of them simply as pyæmic.

This disease, streptococcus osteomyelitis, being as yet little studied, and, in fact, only mentioned in a very limited number of the most recent monographs—where, however, no reference is made to the treatment—I propose to invite your attention to some therapeutical considerations of the affection under discussion, made in accordance with our advanced knowledge of the pathology and etiology of this disease.

Before analyzing our cases with a view to improving the treatment of their entire class, it appears proper to differentiate the cases—on the one hand, from those cases of mild monarticular purulent or sero-purulent affections in relatively healthy children without apparent cause, together with the polyarticular suppurations after infectious and exanthematous diseases (such as diphtheria, scarlet fever, and the like); and, on the other hand, from the cases of osteomyelitis with or without accompanying joint affections, occurring in adults, which are so familiar to us in our clinics, and which are attributed to staphylococcus invasions.

There can be but little doubt that the last-named class of cases, as they appear in the literature and are observed in our hospitals and clinics, appear much less grave than the class of cases under discussion. This statement is borne out by the fact that a large number of authors (Demme, Chassaignac, Fischer, Koenig) are in favor of an expectant treatment of acute infectious osteomyelitis in the adult, until the time when the necrosed bone shall have become loosened by eliminating suppuration. Again, many writers (Rosenbach, Baumgarten), familiar with the different behavior in laboratory experiments of the two varieties of pyogenic germs mentioned, state that the clinical course of the diseases induced by the streptococcus is of a more grave character than those induced by the staphylococcus. These considerations, added to the clinical observation of our cases, give me an additional reason for urging a more radical and timely interference in all cases similar to ours.

As regards those cases of acute suppuration in one joint, occurring in children, which have been described by Volkmann under the name of

acute catarrh and blennorrhœa of the joint, there can be no doubt, in the face of our present knowledge of the etiology of the affection, that we have to deal with the identical disease under discussion; but with this difference—that the infection is much milder in form. In consequence of this, the clinical aspect of these two classes of cases is entirely different; and especially so should be the treatment.

In Volkmann's catarrhal inflammation of the joint, the child is in apparently good health throughout, and when brought to the surgeon does not appear to suffer from aught but a local trouble. The entire course of the disease is a more acute one; it is less insidious in its attack, and yields promptly to surgical interference of the simplest nature—simple incision into the joint and drainage with the use of suitable splints and antiseptic dressings (even without irrigation) being sufficient to restore good function of the joint. The only measure imperatively called for is the avoidance of delay, it being of great importance to make an early incision before the epiphyseal cartilages have been eroded and destroyed—although Rauchfuss has shown that in infants even these destructions are quickly repaired by the more active growth of these parts in children.

Much the same conditions are present in the suppurative joint affections after infectious diseases. In connection with this point I offer the following case:

B. L., five years of age, a native of the United States, had had measles some weeks previously; was brought to me with pain and swelling at the knee-joint. No precise history of the attack. For two days expectant treatment was adopted, a splint being applied. Then the skin over the joint having become red and inflamed, and the swelling not having diminished, aspiration of the joint was done, which revealed thick, creamy pus. An incision was immediately made over the point of greatest prominence, corresponding to the outer condyle of the tibia, a drainage-tube inserted, antiseptic dressings (creolin) and a splint applied. Under three changes of dressing the joint recovered perfect function. But at the site of incision the skin remained adherent to the bone. (October 7, 1891.)

If we compare the case just narrated as a representative case of the class formerly called catarrh of the joint, with the cases reported to-night, we observe that, clinically, there is little danger of confounding them. The general symptoms of fluid in the joint, it is true, are equally prominent in both classes of cases. But in the acute monarticular arthritis of children there is generally a history of a sudden commencement with a high fever and a chill, after which the only affection found is the swollen joint. In the cases under consideration, on the contrary, the fever has already been established, and the joint swelling has gradually appeared, often without even attracting the attention of the mother,

without so well marked pain, and without the sudden exacerbation of the fever.

The *monarticular* nature of the affection described by Volkmann as catarrh of the joint in children can hardly be brought forward as diagnostically important, since, in the class of cases under consideration, we may find only one joint affected at first. On the other hand, in the acute joint affections following the exanthemata and infectious diseases we frequently find two or more joints simultaneously affected.

Indeed, it appears from a study of the literature that we may have intermediate forms representing transitions between the two. But since these cases are generally not accompanied by pathological investigations of any kind, we have no other proof of the truth of this assertion than its probability.

The similarity of the etiology, both in the typical cases of the disorders referred to by Volkmann (Krause), and those following acute infectious diseases, such as diphtheria, scarlatina, measles (Löffler, Heubner, and Bahrdrf), and those under discussion, has been established in the first part of this paper, and enables us to consider them as identical in nature. In order the more to distinguish between them, however, I shall, in this paper, speak of the so-called acute catarrh of the joint as the *mild* form, and of the other class as the *grave* form of streptococcus osteomyelitis (affecting the joints) in children.

We now turn to the consideration of the graver forms of osteomyelitis in children, due to streptococcus invasion.

Contrary to the generally accepted statements concerning osteomyelitis due to staphylococci, that it only attacks children in robust health, and then very acutely, the disease under consideration appears to affect only such children as have been recently exposed to some weakening influences, such as acute infectious diseases, or wounds and ulcerations of long standing.

The commencement of the disease is insidious, and the first thing noticed by the mother is the gradual development of symptoms of prostration and failing vitality. The child, if brought to the physician at this time, at once awakens solicitude. It lies quietly, pale, with sunken eyes surrounded by dark rims; its tongue coated, fuliginous; its skin dry; its temperature not very high, however. Occasionally its face is contorted, it utters sharp little cries, and when disturbed or touched, moves its limbs spasmodically, as if in great pain. Examination of the joints at this stage fails to reveal any local change, but whenever certain parts are touched corresponding to one or more bones with their neighboring joints, exaggerated expressions of suffering may be observed.

In the more advanced cases swellings of the joints are more pronounced, and have been seen by the mother. They have developed

gradually, and not until the child has been ill for some time. Diagnostic aspiration reveals thick pus or sero-purulent fluid.

In the course of the disease further joints generally become the seat of the same affection, and complications may appear at any time in the internal organs and the various synovial sacs.

According to the vitality of the child it succumbs sooner or later to the disease, the symptoms of prostration increasing, with failing pulse, inanition, and coma.

The diagnosis depends mainly upon the early establishment of joint suppuration, with the great prostration and "typhoid" condition.

Differentially we must bear in mind acute articular rheumatism, primary suppurative arthritis, acute tuberculous osteomyelitis (as described by Kiener and Poulet), and syphilitic joint affections.

The former are not characterized by such marked prostration, while the fever is generally much higher; but the syphilitic joint affections may easily simulate the disease under discussion, and in this connection I may refer to a case which I had the opportunity of observing in consultation with Dr. Koplik.

Male child, eight weeks old, was brought to the dispensary with painful swelling of the right elbow-joint, September 9, 1891. His mother had had syphilis, and had been under treatment for endometritis decidua. For the past week she had noticed the gradual development of the swelling at the elbow.

Status: The child appeared well developed; no fever. Sparsely distributed papulo-squamous syphilide present on arms, hands, palms, nates, thighs, legs, and soles of feet. Discoloration and sallow tint above eyebrows and alæ of nose. The elbow-joint was much swollen, painful; but the skin above it not reddened. There was no distinct fluctuation; the epiphyses of the bones forming the joint were enlarged. Attempted passive movements called forth manifestations of pain. No preternatural mobility.

Diagnosis: Congenital syphilis.

The treatment consisted in the administration of calomel (gr. $\frac{1}{4}$ t. i. d.) and iron (Wiederhofer's powders). The elbow was put on a suitable splint for two weeks. After three weeks the constitutional symptoms had disappeared and the elbow-joint appeared in every way normal.

Actinomycosis and glanders may also simulate the disease under discussion. But on account of the rarity of their occurrence in children I omit a comparison with them.

The treatment of the cases described in the first part of this paper was conducted, as mentioned above, on general surgical principles, at least at first.

As soon as a joint appeared swollen and painful, it was aspirated under strict aseptic precautions, and the fluid extracted examined. If it proved to be purulent, the joint was incised under antiseptic precautions, provided with drainage, antiseptically dressed and immobilized

by the use of splints, and kept elevated (this treatment being the same as that found effective in the milder forms of osteomyelitis mentioned above). The case was then observed. If, in the further course of the disease the drainage proved inadequate, or if the disorganization of the cartilages of the joint appeared progressive, further and more effective measures were adopted, consisting either in laying open the joint by wide incisions and counter-incisions (arthrotomy) with subsequent packing and immobilization, or else in arthrectomy or exsection of the joint.

Thus in Case I., of the female child, two weeks old, incision of the right knee was done (on the inner aspect) immediately after the aspirating-needle had revealed pus. The pus being of great consistency, the joint was also well washed out with a 1 per cent. creolin solution, and a drainage-tube left in. This was followed by apparent improvement. Nineteen days later the left knee was aspirated, but no pus being found, no operation was done. The hip-joint now being swollen and reddened, it was incised at the point of greatest prominence, internally to the femoral artery, and supplied with a drainage-tube. On the twenty-fifth day of observation the abscess from the costo-sternal joint was opened and drained. On the fifty-third day of observation, the joint cavities still secreting pus, and the disorganization of the cartilages progressing, the right knee was treated by arthrotomy and the left hip by exsection of the head of the femur; the left knee being partially excised. Creolin was used throughout for irrigation and dressing. The knees were packed with creolin gauze through the lateral incisions, and the cavity of the hip-joint supplied with a large drainage-tube. Extension splints were applied. The child was cared for at the New York Polyclinic Hospital. Death did not occur until two days after the operation. The delay in the final operative procedures was caused by a desire to employ conservative surgical measures.

In the second case, a girl of two years, the left wrist-joint was aspirated on the first day of observation, and all the swollen joints of the hand were promptly opened and drained. Six days later both elbow-joints appeared swollen. The right elbow-joint was incised and drained; but operation on the left one was deferred on account of the prostrated condition of the patient. This joint was opened seven days later and the patient died one day afterward. The delay in this case was caused by the apprehension that the patient, in her weak condition, could not stand further surgical interference, broncho-pneumonia and a complicating nephritis being present.

At the time when these two cases were first under treatment, they were entered upon my books as "septic arthritis," and spoken of as cases of "pyæmic joint affections." This diagnosis will show that at that time our attention was directed almost entirely to the joints themselves as the main seat of the affection, and as the proper object of therapeutic attack.

It is true, I was aware at that time of the theories (referred to at some length by Müller) that the infectious agents entered into the

joints from the medulla of the bones (Driessen) and the epiphyseal portions (Koenig), but I did not at that time imagine the foci in the bone to play so important a part in the disease as I was afterward led to conclude. And, in fact, there was absolutely no symptom present in our cases which could in any way lead the observer to suspect the diaphysis as the main seat of the disease.

But when, shortly afterward, I had the pleasure of witnessing the experiments on animals performed by Dr. Koplik, and examining the cultures and specimens emanating from these cases, my attention was more especially directed to the conditions present, in these cases, in the medulla of the bones. Here we find numerous and large foci representing pure cultures of the microorganism proved by experiment to be an etiological factor of the disease, located in the medulla proper and in the Haversian canals. As long as these foci are permitted to remain and to thrive and flourish, it is natural to suppose that the economy will be inundated by large amounts of ptomaines and toxins, and that to this fact is due the great weakness and prostration which presents so important a clinical feature in these cases.

What, then, appears simpler and promises a better hope of success in combating the disease than the removal of these foci as early and as thoroughly as possible? For in this manner we attack not only the cause of local trouble, but the breeding-place of systemic intoxication as well.

In looking back at the first two cases it is evident that the treatment of the first could be materially improved—provided nothing interfered with the carrying out of our intentions. Much might have been gained by cutting down on the bone of the femur and examining into its condition, with the view of determining whether the periosteum appeared loosened about the bone, and whether other symptoms of acute osteitis and suppuration of bone existed. Whenever two neighboring joints of the same limb are simultaneously affected, it is highly probable that the entire diaphysis is affected with an acute diffuse osteomyelitis. Could not, then, the entire diaphysis be removed, and at the same time both joints be evacuated, in order both to prevent the further necrosis of bone, and also prevent the poisoning by absorption, and the life of the patient thus saved?

Radical measures, in the acute stage, have frequently been proposed for necrosis of bone following osteomyelitis, especially in adults. All surgeons are familiar with the tenets of Chassaignac and others, who advised primary amputation in such cases, where the whole of the femur was attacked by acute osteomyelitis. But amputation, or exarticulation, at the hip is such a dangerous procedure in these conditions of pyogenic intoxication that, in consequence of bad results, the practice has been abandoned. Indeed, even the size of the wound alone in such a case

appears too serious a complication to be sought when it can possibly be avoided.

Again, Holmes, Ollier, and others have spoken in favor of early subperiosteal resection of the diaphysis or parts of the bone in acute osteomyelitis and periostitis. But, as far as my knowledge extends, such procedures have never been advised in the treatment of what has hitherto been called septic multiple arthritis, or pyæmia principally affecting the joints. And yet from the evidence brought forward in the first part of this paper such a course of proceeding does not seem inappropriate.

It was not until after such considerations had been called forth in our minds by the clinical course of the first two cases that the third case presented itself.

This, it will be remembered, was a girl, ten months old, who, when first seen, presented pneumonia involving the right, middle and lower lobes. There was at this time a fluctuating swelling of the wrist, extending somewhat up the forearm; the elbow-joint was also swollen, but not fluctuating. The wrist-joint, revealing pus on aspiration, was incised and drained, and antiseptic dressings and suitable splints were applied. Two days later the disorganization of the lower epiphyses of the bones of the forearm appeared to have increased in extent, and, therefore, an indication for further interference was considered to be given; yet, the temperature and pulse-rate being high (104° and 160, respectively), and much dyspnoea being present, owing to the pneumonia, such operative interference was postponed for fourteen days, when the patient had recovered from the effects of the lung complication. Then, there being more evidence of pus in the elbow-joints, both were opened with extensive incisions; necrosis was found at the epiphyses. Next, the radius was laid bare by a longitudinal incision—at first in its lower half—and it proved to be, as suspected, necrotic in its entire extent. It was, therefore, removed *in toto*. The wound was packed with creolin gauze and extension splints applied. The periosteal covering could not be recognized, with the exception of some shreds in the neighborhood of the elbow-joint, and its disappearance was attributed to the delay in the operation and the extension of the inflammatory process.

The condition of the patient being one of extreme prostration and weakness after the pneumonia, a bad prognosis was made at the time of the operation, which was done at my clinic at the New York Polyclinic. Nevertheless, the little patient made a rapid and good recovery.

At the time of dismissal from observation, some two or three weeks later, there was no evidence of a regeneration of the radius; and the firmness of the hand had been materially impaired by the loss of the radius, with the usual bowing of the forearm consequent upon radial shortening. I felt, however, that this was better than the loss of the entire forearm by amputation; nor could I escape the impression that the chances of recovery on the part of the patient had been materially improved by the substitution of the extirpation of the radius for the more formidable operation of amputation. Unfortunately, all trace of this little patient has been lost, as the address was mislaid, and the provision of a suitable apparatus for supporting the hand was, therefore, impossible.

I feel confident that, by paying greater attention to the diaphyses of the bones in cases of multiple septic arthritis of infants, we can do more to avert the fatal termination; and that a timely subperiosteal removal of the diaphysis, when two large joints of the same limb are affected, even if the limb should remain crippled, will be found more beneficial to the patient than other modes of treatment.

Especial stress, I contend, should be laid on the *early* interference. It is apparent from the laboratory experiments on animals referred to that, in the cases of the rabbits experimented upon, the joint suppuration was present at a time when only osteomyelitis in the medulla of the bone was found, but when no foci could be found in the epiphysis or head of the bone. It, therefore, appears probable that the arrosion of the cartilages represents a more advanced stage of the osteomyelitic inflammation, and that there is a time when, although both the diaphysis and the joint are affected, yet the epiphyseal cartilages still remain intact. If it were possible to take out the diaphysis at this time it would probably be possible to secure excellent results, complete regeneration of the diaphysis from the intact periosteum and complete restoration of the function of the joints, owing to the unimpaired condition of the epiphyseal cartilages, being the ultimate issue which we may properly expect.

Unfortunately, in practice the difficulties of diagnosis and the hesitancy on the part of the parents of the children will frequently interfere with an ideal conduct of the therapy in these cases. We should, however, not be deterred from making an exploratory incision down to the bones suspected of being the seat of the affection and examining thoroughly into the condition of the bone and its covering.

I am well aware, too, that in a certain number of cases, where diaphyses were removed *in toto* in the acute stages of osteomyelitis in adults, there was very little or no consecutive formation of new bone by the remaining periosteum. There are a number of such cases reported in our literature (Vogt).

It is, therefore, not impossible that this danger might threaten our little patients. As far as I know, however, no such case has been reported in children. But even in case the reproduction of bone should not take place as expected, I believe even this result would be more desirable than the danger to the child of exposure to the toxic influences emanating from osteomyelitic foci permitted to remain in the system. And in case a femur should have been removed in conformity with the treatment advocated above, and consequent reproduction of bone fail, a secondary amputation of the thigh, when the child has recovered its health, would certainly be a less dangerous operation than when done in its septic condition.

A further point of interest which requires our attention attaches to the condition of the epiphyseal cartilages.

Whenever primary subperiosteal extirpation of a bone in the acute stage of osteomyelitis in adults has been advised and practised (Holmes, Giraldès, Duplay, Thelen), it was considered a *sine qua non* that the epiphyses should be intact. If done, however, as in our third case, for an indication derived from the joint affections, it may happen that the epiphyseal cartilages are found extensively arroded or entirely destroyed, especially if the surgical interference has had to be delayed. In these cases the vital indication will still reign supreme, and we should not be deterred from endeavoring to save the life of the patient by the fear of crippling one limb.

Instead, however, of removing the entire osseous and cartilaginous structures at once and together with the necrosed diaphysis, I would propose rather to remove the arroded cartilages, or as much of them as is deemed necessary, by resection from the joint cavity, at the time of exploring and draining the joint. In this manner it may be possible to preserve a thin section of cartilage at the epiphyseal line, which, left in connection with the periosteal covering of the diaphysis, may insure more favorable conditions for the ultimate restitution of function.

The invasion of the central canal of the larger bones for the purpose of scraping out the medulla with sharp spoons and curettes (Sédillot, Keetly, *et al.*) is not easy of accomplishment in children, where the bones are small; nor could we expect it to hold out much promise of success when we bear in mind that the Haversian canals, which cannot be reached by this process, were found crowded with streptococci in the experiments, from which localization absorption of poisons into the system could still go on uninterruptedly.

The same consideration applies to the practice of trephining the bone (Ollier).

The presence of foci in the kidneys and other internal organs of the body may certainly present contra-indications to surgical interference of a severe character. When, from examinations of the urine, we find nephritis present, or complications existing in the lungs, pleuræ or pericardium, we may with propriety hesitate, in view of the more unfavorable prognosis, to resort to extreme measures in attacking the disease.

Thus, we read of cases of joint suppuration reported in our literature (*e. g.*, Baginski) where the infants were in so hopeless a condition, owing to complications in internal organs, that all interference could not but be regarded as utterly useless.

Nevertheless, the removal of every focus from which inundation of the system with ptomaines may continue, must represent a certain gain to the economy, and, therefore, an active reinforcement of the patient's strength. I, therefore, wish to advocate surgical interference *within reasonable limits*, whenever we may anticipate the establishment of more favorable conditions for the patient. Happily, the streptococci show such

a decided preference for localization in the joints that complications in other organs, if not far advanced, may retrograde, leaving the osteomyelitic foci the only menaces to life.

In conclusion, I offer the following considerations by way of recapitulation, and as therapeutic measures governing the conduct of the class of cases under discussion :

Since, in certain cases of acute suppurative joint affections, generally polyarticular, and occurring especially after distant wounds or inflammations of exposed surfaces, it is now established that we have to deal with an occult osteomyelitis involving the joints secondarily, but producing no clinical symptoms over the primary foci, and due to a streptococcus invasion of the system, I contend that these cases be considered as eminently surgical cases, and as proper objects for treatment in our surgical clinics.

Hitherto the pathology of these cases has not been fully recognized ; they have been regarded in the light of septicopyæmia, and have, from our present point of view, been neglected or inadequately treated. Not only the joint-cavities containing purulent effusions should be attacked, but the real foci of the disease situated in the bone-marrow of the neighboring bones as well, and these chiefly.

This attack should be made at as early a date as possible, so as to prevent a greater destruction of tissues than is unavoidable, and especially of the epiphyseal cartilages and of the periosteum.

For this reason active measures should be taken to examine into the condition of the bone by incisions along the shaft ; and if the diaphysis appears partly or wholly necrotic, or if the periosteum appears loosened from it and inflamed, as much as is deemed necessary should be subperiosteally removed.

This resolve should not be influenced by the apprehension that subsequently adequate reproduction of the bone may not take place. If this should happen, the help of auxiliary apparatus must be invoked, and especially for shortening, or a secondary amputation done when the patient has regained his strength.

Nor should the fact that the epiphyseal cartilages have become arroded and disintegrated be allowed to interfere with the extraction of the foci of osteomyelitis, for it is of the first importance to remove from the system all hotbeds for the propagation of toxines. Only the diaphysis should, however, be removed through the longitudinal incision. The cartilages should be treated in conjunction with the joint.

The joints should, at the same time, be treated by free evacuation and drainage ; if they be found completely disorganized, resection or arthrectomy should be done according to general surgical principles. As much as possible should be saved. Arroded or partially destroyed

cartilages should be treated by gouging, with preservation, if possible, of the epiphyseal line.

The technique, as well as the indications, will differ for the various joints.

Thus, for simple suppuration of the knee-joint in the graver forms of osteomyelitis, it will suffice to open the joint by longitudinal incisions on either side anteriorly to the lateral ligaments, the incisions also invading the large bursa under the quadriceps tendon.

For the hip-joint, however, the same affection will demand exsection of the head of the femur, because otherwise it is not possible to secure thorough drainage of the infected cavity.

The astragalo-crural articulation cannot be sufficiently drained after simple arthrotomy, so that partial excision of one or the other malleolus is indicated.

The shoulder-joint may be exsected for suppurative disorganization with more propriety in the adult, in order to prevent the ankylosis which would result after simple arthrotomy; but since in children interference with the epiphysis of the humerus means almost complete arrest of development of the bone, we may hesitate to do more than simple arthrotomy. Happily, the shoulder-joint appears to be less frequently attacked than the other joints. In most cases the elbow- and wrist-joints can likewise be sufficiently drained only after partial excisions, owing to their complex anatomical formation.

As to the smaller joints of the hand and foot, no general rules can be laid down; very rarely, I believe, will amputation be called for. Such smaller bones as are attacked may be taken out subperiosteally, if possible. If the joints cannot be properly drained, exsection is here indicated. The smaller foci, however, do not threaten the economy in the same measure as do the foci in larger bones, and oftentimes we see an attacked small bone recover from its inflammation without necrosis.

As to the choice of antiseptic methods and dressings in these operations little need be said. Active antiseptics is to be preferred to simple asepsis as affording more success in combating the septic processes we are attacking. Sublimate, carbolic acid, and especially iodoform, however, should be avoided in the cases of young children, as too readily leading to intoxication in their prostrated condition. Creolin, in 1 or 2 per cent. solutions, freshly prepared, has proved satisfactory to me in the cases here alluded to, especially when we cannot be certain of removing all the irrigating fluid from the joint-cavity.

REVIEWS.

A PRACTICAL TREATISE ON THE DISEASES OF WOMEN. By T. GAILLARD THOMAS, M.D., LL.D., Professor Emeritus of Diseases of Women in the College of Physicians and Surgeons; Consulting Surgeon to the New York State Woman's Hospital, etc. Sixth edition, enlarged and thoroughly revised by PAUL F. MUNDÉ, M.D., Professor of Gynecology at the New York Polyclinic, and at Dartmouth College; Gynecologist to Mt. Sinai Hospital, etc. Containing 347 engravings on wood. Pp. 826. Philadelphia: Lea Brothers & Co., 1891.

FEW literary experiments have been awaited with greater expectation by the medical public than the effort to revive the popularity of a book which once occupied a unique position in gynecological literature. We say "once," because its retirement as a text-book has been inevitable. The career of a successful work, like that of a successful individual, is often shaped by circumstances which to a superficial observer appear to be purely fortuitous; but in order that success may be permanent and not ephemeral, both must possess "staying" qualities.

The possibility of a successful literary partnership has been frequently demonstrated, notably in the case of the Edinburgh gynecologists. Partnership in revision is a doubtful experiment, comparable to that of putting new wine into old bottles. Such work, however skilfully performed, cannot but be uneven. Absolute harmonizing of old and new medical theories is impossible. To the iconoclastic spirit of the age "all things have become new." The delicate nature of the task undertaken by Dr. Mundé we thoroughly appreciate, and shall accordingly endeavor to bear constantly in mind the limitations necessarily imposed upon him, even though one would infer from the preface that he had *carte-blanche* to "change, omit, or add wherever he saw fit." If we interpreted this literally we would derive from his work an altogether erroneous idea of his progressive tendencies, which are well known. Still, when it is claimed that a book has been thoroughly rejuvenated the critic has the right to hold the reviser, as well as the author, responsible for the views as they stand.

In his modest preface Dr. Mundé indicates the scope of his revision, calling attention to the fact that with the exception of the introductory sketch of the history of gynecology "all the other chapters have been largely altered, and several entirely rewritten." This promise seems on a cursory inspection to be amply fulfilled, but a close comparison with the fifth edition, page by page, shows to our surprise and disappointment that there has not been that rigid exclusion of outworn ideas which we had a right to expect. The general chapters on etiology, pathology and therapeutics remain practically unchanged, except as regards modern operative technique—indeed we do not see how they could have been improved upon.

Chapter VI. on electricity is new, and though short, contains the gist of the matter, presented in the editor's usual clear and practical manner. The chapter on congenital malformations has an addition of four pages on hermaphroditism. A statement introduced on page 125 is an inexcusable anatomical error, pointed out long ago by Schroeder, viz., that the carunculæ myrtiformes are the remains of the hymen after rupture, instead of being always the result of the sloughing following parturition. We agree with him that there seems to be no reason for retaining the section on "hyperæsthesia vulvæ" as a distinct affection. The treatment advised for prolapse of the urethral mucous membrane (excision of the prolapsed portion) has been condemned by Dr. Emmet, who has shown that it does not effect a permanent cure.

The chapter on the anatomy of the perineum represents an attempt to adopt new ideas without wholly abandoning the old. The effort to reconcile discrepancies is not entirely successful: witness on page 168 the original expression "keystone of the arch," which has been so severely criticised in the past. Nowhere do we find any reference to the so-called "perineal body" as simply a part of the pelvic floor—a view much more rational, as well as more comprehensible to the student, than the one which assigns to it such an exaggerated importance. The expression "subinvolution of the perineum" recurs frequently as in the former edition. It is to be regretted that a supposed condition, not demonstrated anatomically, is assumed as a fact. The fallacy of this view is shown in the closing paragraphs of the chapter, which have not been altered. It is argued that incision of the perineum in a non-puerperal woman does not necessarily result in prolapse of the vaginal and rectal walls, because "subinvolution of the vagina and perineal body" does not follow, as after laceration during parturition. But no account whatever is taken of the more serious lesions of the pelvic floor which attend the latter, and which the scientific gynecologist cannot now ignore. Chapter XII., on perineorrhaphy, should follow this chapter. The intervening section on cystocele and rectocele has always seemed to us as unnecessary, since these conditions are usually simply complications, not independent affections. Figure 72 is an excellent representation of how Hegar's operation should *not* be performed, as the lower sutures are not buried. There is some unnecessary repetition in Chapter XII. We do not highly approve of the author's method of repairing a freshly-torn perineum, unless the tear is quite superficial. Figure 82 is inaccurate, as in the former edition; the upper suture does *not* "catch up the vaginal tissue at the highest point of the denudation." This is a most important point to be impressed upon the tyro, who might derive an erroneous idea of the operation from a study of the cut. The ancient plan of securing the sutures with a piece of rubber tubing was abandoned at least eight years ago by its originator. The old-fashioned purse-string operation for laceration through the sphincter is described and figured with few, if any, changes. The general reader will certainly infer that there has not been much progress in minor gynecological surgery during the past ten years, if he reads that this is still *the* operation for complete rupture. Dr. Emmet himself now takes the strongest ground against the circular suture, his results being much better with transverse ones, introduced the same as in closure of a vesico-vaginal fistula. The number of failures by the old operation was notorious.

Emmet's operation for colpocele is described, but so briefly that only an expert could grasp the idea. Figure 90 is far from being helpful, since it does not bring out the essential feature of the technique—that the lateral sutures lie entirely *within* the vagina, including *not* skin, but mucous membrane only. The description and illustrations of the flap-splitting operation are much more satisfactory.

Chapter XVI., on diseases of the urinary tract, the absence of which in the fifth edition was noticeable, is somewhat condensed, considering the importance of the subject. Diseases of the urethra receive a brief notice, no allusion being made to Emmet's unique plastic work. Acute and chronic cystitis are treated of together, which leads to some confusion. Ureteral disease is regarded as an anatomical curiosity. Few changes have been made in the chapters on fistulæ. Figure 117 is no improvement over figure 92 in the old book, the needle in the former cut being represented as abnormally delicate. Some attention should have been called to modern methods of avoiding the traction upon the edges of vesico-vaginal fistulæ by cicatricial bands, and the plastic operations resorted to in order to overcome this difficulty. The reader ought to understand that the treatment of such cases calls for more technical skill and experience than any other branch of minor gynecological surgery.

The pathology of endometritis has always been the battle-ground of authors. We have somewhat enlarged our views on this subject during the past decade. It is with some surprise, therefore, that we find so many etiological factors invoked in the causation of acute inflammation of the endometrium, when we have learned to believe that sepsis and specific infection play the principal part. We may properly ask, also, if no advance has been made in treatment, that we are still advised to rely upon warm poultices (changed only once in twelve hours!) and vaginal douches. The sharp distinction between chronic cervical and corporeal endometritis is still maintained, with their separate sets of causes and symptoms. The statement that "corporeal endometritis is a glandular disease" is not in accord with the teachings of modern uterine pathology. Hypertrophy of the mucous membrane (endometritis fungosa) is by far the most common variety. Hydrometra must be an extremely rare result of endometritis.

Chapter XXII. concludes with three pages in brackets by the reviser, in which he defines his own position with regard to intra-uterine medication, his opinions being somewhat at variance with those of the author. We are surprised by the omission by such a progressive writer of any reference to tamponade of the uterine cavity with gauze after divulsion, which is preferable to his "cylindrical wad of cotton covered with iodo-formed vaseline," still more to the styptic cotton which he leaves within the uterus for twenty-four or forty-eight hours—a method of treatment which might result disastrously in less skilful hands than his.

And now for the famous chapter on "Areolar Hyperplasia," the *bête noire* of our student days! What can we say of it that has not already been said (or thought), except to express our disappointment that no visible change has been made? It remains still an ingenious attempt to exalt a mere "end-process" (to use a Teutonism) to the dignity of a disease, to expand a felicitous descriptive term into a pathological theory—with what success we leave to the judgment of a new generation of students. The old formidable list of symptoms is

retained, with the former necessary foot-note to this effect: "It must not be supposed that all these symptoms occur in all or even in the majority of cases. In many cases few, and in some almost none of them will be recognized." The present reader, like the reader of ten years ago, naturally wonders why so many are specified. On page 321 subinvolution is mentioned among the diseases (?) which are to be distinguished from areolar hyperplasia, while, on page 318, the former is said to be the most frequent cause of the latter—a contradiction which has always been confusing to students. One must conclude that the reviser has been just a little careless in his work here. "He will be most successful in the treatment of areolar hyperplasia," we still read on page 323, "who most assiduously searches for and cures these complicating conditions (laceration of the cervix, displacements, endometritis fungosa, and granular and cystic degeneration of the cervix) before addressing remedies to the main affection." The point at issue between the author and many of his *confrères* has always been that the latter are disposed to regard the "complicating condition" as the "main affection."

A separate chapter on uterine fungosities is unnecessary, and is calculated to continue the old erroneous idea that these products of hyperplastic endometritis are actual neoplasms. The definition, "fungous projections from the endometrium" is inaccurate and unscientific, as well as the statement that they may result from "organization of portions of placenta." We are surprised that this section, the incongruity of which was recognized by the author in his earlier edition, should have been allowed to stand unchanged. The illustration borrowed from Winckel (Fig. 153) and labelled "multiple adenoma, or so-called uterine fungosities" was never intended by that author to represent this condition. By reference to the original, it will be seen that it pictures a collection of retention-cysts obliterating the uterine cavity. The term adenoma is a peculiarly unfortunate synonym for endometritis fungosa, since it confuses simple hypertrophy with a true neoplasm.

In these days of rigid asepsis we have outgrown the old morbid fear of the sharp curette, and now recognize the fact that in order to thoroughly remove the diseased mucosa the dull wire instrument alone is often inadequate. The section on curetting is another disappointment to the surgical reader. There is no reference to contra-indications, to preliminary divulsion, to irrigation of the uterine cavity, the subsequent application of caustics, or the intra-uterine tampon. Surely a minor operation which is so universally performed, and which every practitioner ought to know how to perform carefully and thoroughly, deserves more than a scanty page, especially when Dr. Mundé has treated the subject so exhaustively in his own monograph on *Minor Surgical Gynecology*. We are instructed by him on page 344 after curetting to tampon the vagina thoroughly and also to "plug the uterine cavity with a cone of absorbent cotton saturated in compound tincture of iodine, which, with the vaginal tampons, is removed in forty-eight hours at the latest." We have never had occasion to resort to such safeguards after this simple operation, and would call attention to the fact that this method of after-treatment has been severely criticised by experienced gynecologists.

The chapter on laceration of the cervix bears ample internal evidence of that thorough revision which we expected it to receive at the

hands of one so familiar with the subject. Most of the illustrations are old familiar friends, but are not the less welcome.

In the five chapters on uterine displacements there is a commendable effort at modernizing, which is not always successful in places where an attempt is made to graft new ideas upon the old. It seems to be nearly time to abandon the position that anteversion *per se* gives rise to the symptoms assigned to it. Urinary symptoms are due to traction upon the vesical neck by the displaced cervix, not to "pressure of the fundus against the bladder," which could only occur in those exceedingly rare cases in which the fundus uteri is fixed—the existence of which is denied by Schultze. No discovery in this revised edition gives us a more disagreeable sensation of surprise than the finding of antelexion pessaries and the erroneous anatomical explanation of their action. We had supposed that this was very ancient history indeed, not having seen the instruments in use for over ten years. Hart and Barbour have pointed out so clearly the fallacy of their supposed action that it is unnecessary to dwell upon the matter, except to express regret that they are still mentioned with approval. The reviser has indeed (page 415) ventured to damn them with faint praise, but his explanation of their inadequacy is far from being the true one—*i. e.*, that they do not elevate the anteverted organ, "owing to the want of a proper base or fulcrum from which to exert the upward force."

The paragraph in commendation of posterior section (page 421) is left unchanged, and will be read with no little interest by the thoughtful student of gynecology. In the revised edition one, of course, infers the substitution of "twenty" for "ten." Some would be inclined to believe that the "formidable wave of professional opinion," which in the former volume was represented as "steadily advancing in opposition to this operation," has not only reached, but has buried it.

In the section on retroversion pessaries the old leaven appears. Still are we told that there are two forces exerted through the instrument—one which "pushes the corpus uteri upward and forward," and another which "pushes the cervix upward and backward." This is hardly in accord with the results of subsequent observations, which have now made every medical student familiar with the elementary fact that a pessary acts in the same manner as the sacro-uterine ligaments—drawing the cervix backward and throwing the fundus forward.

The subject of fixation of the retro-displaced uterus, the opprobrium of gynecology, receives scant attention, considering its importance. The general reader will infer from the omission of any reference to palliative treatment that in this common condition there is no alternative between letting the patient alone and resorting to some more or less serious operation—a pessimistic attitude which, however much we may be inclined to entertain it ourselves, we ought not to teach, to the utter discouragement of the student. Here would have been an appropriate place to set forth the value of graduated pressure with the tampon, but one misses any allusion to this indispensable agent, except as hæmostatic (on page 67).

The chapter on inversion has always seemed to us too long, in that it deals with a rare condition, the various methods of treatment being of interest purely to the specialist.

One approaches the companion chapters on cellulitis and peritonitis with no small degree of expectation, in view of the radical changes

which have occurred in our pathological views. But there is no occasion for either curiosity or excitement, as no startling innovations are encountered. A latent suggestion of modification is contained in the prefix *para* (for *peri*) in the heading of Chapter XXXII., but that is all, except a vigorous, but sensible, protest against the views of some abdominal surgeons that pelvic cellulitis does not exist at all. The dogmatic assertion on page 468 will not be generally accepted, viz.: "Pelvic peritonitis and pelvic cellulitis are, in fact, independent and entirely unassociated diseases, just as pleurisy of one part of the lung may occur at the same time with an inflammation of the substance of the lung at another point." This comparison (which is borrowed from the author, since it occurs in its original form on page 477) is an unfortunate one, although at first sight it appears quite apropos. As a matter of fact, these conditions so frequently associated in the thoracic cavity (in eighty-five per cent. of cases of pneumonia, according to Loomis) are not comparable to pelvic inflammations. The union between the cellular tissue and peritoneum is much more intimate, and an extensive independent inflammatory process in either is hardly imaginable. We do not deny the existence of a distinct primary cellulitis or peritonitis, but we simply deplore the weakness of the argument that "there is no reason why the cellular tissue of the pelvis should be free from the tendency to inflammatory exudation undeniably accorded to the same tissue in every other portion of the body."

Whatever may be the correct view with regard to the occurrence of cellulitis, one cannot now accept the statement on page 471 (retained as in the former edition), that non-puerperal cases are generally of traumatic origin, or that, as a rule, irritations inflicted upon the uterus below the internal os will result in pelvic cellulitis, above that point in pelvic peritonitis. No such forcing of pathological facts into correspondence with theories is acceptable to the present generation of readers. It has been demonstrated beyond a doubt that in all the fatal cases of trachelorrhaphy, posterior section, and other minor operations upon the cervix uteri, death was due to septic infection transmitted, not to the cellular tissue, but along the endometrium, through the tubes to the peritoneal cavity. With cases in which no autopsy was made we have nothing to do. There is no legitimate basis for a pathological theory except the anatomical. With regard to the differential diagnosis between cellulitis and peritonitis we must still be content with the meagre information that in the latter "a small tumor may be discovered, but it is usually posterior to the uterus, and not on one side of it." And again: "The uterus is rather more movable than in cellulitis, especially from above downward." Now that we regard fever purely as a symptom of septic infection, the statement that in acute peritonitis death may be due to high temperature, and that if the thermometer registers 102° F. one must resort to vigorous antipyretic measures, is apt to be misleading, diverting the attention of the practitioner from the main issue.

We are led to inquire, on reading the caption "Treatment of Chronic Cases," What is chronic peritonitis? Following the misleading nomenclature of the past, one would infer that a progressive inflammatory process was implied. In reality, we mean simply the peri-uterine adhesions which represent the result of former inflammation. The acute exacerbations to which allusion is made are simply fresh attacks of peritonitis, due, as we now all admit, to fresh infection from diseased tubes.

If this is the case, it may be pertinently asked: What permanent benefit can be expected from simply evacuating pus in such a case of "chronic peritonitis" while the septic focus remains?

On page 495 the importance of distinguishing between intra- and extra-peritoneal collections of pus is emphasized, but the extreme difficulty in making the distinction is not shown. To the means advocated for closing an old abscess-cavity we would add peroxide of hydrogen, a more valuable agent than any mentioned. Curetting the sac, thorough irrigation, injection of peroxide and tamponing with iodoform gauze sometimes succeed in the most obstinate cases.

To the chapter on pelvic hæmatocele we must file several objections, which lack of space does not permit us to present in detail. The list of etiological factors is as long as ever. Some of these are now recognized to be purely theoretical. Who has ever opened the abdomen for hæmatocele and discovered and tied at the operating-table a ruptured vein or artery in the broad ligament which was the source of the hemorrhage? Who has discovered such a condition at an autopsy? From a practical standpoint the gynecologist has nothing to do with hypothetical causes. Hemorrhage from the ovary and from rupture of an ectopic sac, especially the latter, are now known to be by far the most common causes. The astonishing frequency of the latter condition and its relation to both intra- and extra-peritoneal effusions of blood, the importance of differentiating the two varieties, and the indications for prompt surgical treatment—these are the burning questions of the day, and the ones of more interest to the practitioner than almost any other subject in gynecology. The gist of the modern treatment is contained in the bracketed comments.

The chapters on fibroid tumors have been carefully revised and brought up to date; the sections on surgical treatment are judicious and conservative, allusion being made to total extirpation of the fibroid uterus, an operation which has been demonstrated by Chrobak to have a future.

The attempt made to place the section on adenoma upon a better pathological basis is not entirely successful, since it is again confounded with hyperplastic endometritis. "Villous endometritis" is a misnomer. There is only one true adenomatous neoplasm, the *adenoma malignum* of Schroeder, which, as well as sarcoma, should be treated by total extirpation of the uterus just as soon as the diagnosis has been made, provided that there are no positive contra-indications. We cannot assent to the statement that "the same treatment (curetting) applies to both the minor and the major varieties of the disease," i. e., to malignant adenoma and villous endometritis.

The pathology of the chapter on cancer of the uterus was rather severely criticised by a former reviewer. It has undergone some changes, but the division into epithelioma, encephaloid, and scirrhus is still retained, with the former foot-note, that clinically they are often found combined in a single specimen. We regret that the student is still confused with an attempted clinical distinction between the three forms, which can be of no practical use to him. The term scirrhus appears to be used in one place to describe clinical, in another microscopical peculiarities.

It is somewhat discouraging to find that in the past ten years we have not learned to detect any more accurately the initial symptoms of can-

cer of the uterus, and that it is only after ulceration occurs that an experienced examiner is able to make a positive diagnosis. If this were strictly true the brilliant results already obtained from radical operations would be inexplicable, since they depend for their success upon early diagnosis. It is highly important that the general practitioner should learn to recognize the disease in its incipency and not simply at the inoperable stage. We are not so pessimistic as to believe that this may not be attained.

The sections on the disorders of menstruation are capable of condensation. There is no advantage in describing menorrhagia, metrorrhagia, dysmenorrhœa, etc., as if they were distinct affections instead of being mere symptoms. The chapter on leucorrhœa in the former edition has been wisely omitted, and the following one, on sterility, appears much improved in its proper position at the end of the volume. Chapter XLV. in the old book, a stray waif, bearing no relation to that which preceded or followed it, has also disappeared.

The subject of diseases and neoplasms of the ovaries (pp. 636-751) has been carefully worked over, and, as a whole, calls for little criticism. A few minor exceptions may be taken. Attention should be called to the fact that acute non-puerperal oöphoritis occurs independently of disease of the tubes, recent observations having demonstrated the fact of the direct transmission of septic infection from the uterus to the ovaries, through the medium of the lymphatics. We cannot now properly affirm that "the symptoms of this affection are so intimately associated with those of peritonitis and cellulitis that it is impossible to separate them." An eminent authority on this subject (Slavjansky) takes a contrary view, which is held by others. The pain, if not absolutely characteristic, is certainly of a different type from that attending ordinary peri-uterine inflammation. Abscess of the ovary would naturally be discussed under the head of acute oöphoritis instead of in a separate section. We are glad to note that chronic oöphoritis is regarded, not as a chronic inflammatory process, but as simply a hyperplasia, the result of repeated congestions or former inflammation. On page 658 the belief is still expressed that utero-gestation is a desirable condition, because it "secures the ovaries from monthly congestions for nine months." This is not entirely consistent with the opinions expressed on page 43, and is a view by no means universally entertained. The pessimistic views formerly entertained by the author with regard to the treatment of chronic disease of the ovaries have been somewhat modified, but are still calculated to discourage the non-surgical reader. They are certainly candid, and doubtless most of us would subscribe to them if we were as honest.

Chapter XLIII., on ovarian cysts, is excellent. We do not agree with the writers regarding their idea of an explorative incision. When a cyst is emptied (as described on page 707) the operation certainly exceeds the limits of a mere exploration.

The chapter on diseases of the tubes is a good index of the progress made in our knowledge of these affections. The explanation of the origin of hæmato-salpinx as due to "the regular monthly discharge of blood from the tubal mucous membrane" is purely theoretical. Excluding cases of atresia of the genital tract, the most common cause is doubtless tubal gestation. Pure hæmato-salpinx is very rare and is usually secondary to hydrosalpinx, just as many cases of so-called hæma-

toma of the ovary are simply the result of hemorrhage into a preëxisting cyst; the sanguineous effusion under these circumstances is rarely sudden, nor would we expect acute symptoms. Drainage of a pyosalpinx per vaginam is certainly deserving of attention, although it has been severely condemned by some abdominal surgeons. It does credit to the reviser that he is not afraid to express unpopular conservative views when he feels justified in doing so.

Considering the importance recently assumed by the subject of extra-uterine pregnancy and its voluminous literature, one cannot help thinking that Chapter XLVII. is susceptible of still further improvement. The denial of Veit's statement (made fourteen years ago) that "about one-fifth of all cases of hæmatocele are due to the rupture of tubal pregnancies, and that recoveries occur under these circumstances much more commonly than is generally supposed," is surprising in the face of accumulated evidence, which proves that the proportion is much higher. Surely some concession should be made to our increased knowledge of the pathology of this condition, the frequency of which is attested by every society report, not to speak of the numerous monographs which have appeared during the past five years. The symptomatology is not clear and concise, in fact it relates only to the recognition of the condition *after* rupture, whereas prominence is given to its treatment before this has occurred. Variation in the ordinary type of menstruation, the peculiar colicky (not "dull, grinding") character of the pain, the passage of decidual membrane—these symptoms, which it is so important to impress upon the general practitioner, are not emphasized as they should be. The section on prognosis should be modified to accord with more recent experience.

It may be regarded as unfair in a reviewer to criticise the old, as well as the new, portions of a book, yet we hold that in a revised edition of an important work the profession have a right to subject it as a whole to the tests of modern science. It should be assumed that it is fully abreast of the times, and that it represents the present views of both the author and the reviser. Recognizing the delicate and difficult nature of Dr. Mundé's task, which he has doubtless discharged as well as any other American gynecologist could have done, we feel that we would have been wanting in candor, as well as in fairness, had we not called attention to such errors as met our attention in a somewhat careful study of this work. Many of these we are inclined to believe were due to haste, others may have been unavoidable from the peculiar position in which he was placed. An essential change in the plan of the treatise we did not expect. Had such a radical transformation been attempted, it would no longer have been the brilliant and attractive work of our student-days—it would not have been Thomas's book. Unquestionably it has been much improved, and great credit is accordingly due to both the author and the reviser. While much that detracted from its unity has been omitted, one regrets that it has not been condensed and strengthened by the omission of useless references to worn-out beliefs. We predict that in the text-book on gynecology of the future fewer diseases will be described—many which are now treated as if they were distinct affections being assigned to their true place as mere symptoms or complications. There will be no lengthy discussions on moot points in pathology. Theories will give place to facts. Such a book will be not

merely a mirror of its author's practice, but an epitome of the collected wisdom of the age.

The smoothness of the work is marred by the frequent interpolation of parenthetical references to cases and specimens, with which the special reader is more or less familiar. We trust that we are understood in our criticism of this feature—purely as a literary blemish. The student and general practitioner who seek for incisive, dogmatic statements will only be confused by these numerous excerpts from case-books, which are all right in their proper place, *i. e.*, in a journal article. It is impossible to prophesy exactly what niche this volume in its new dress will fill in gynecological literature. That it will ever regain its former exalted position as a text-book is impossible, though it will always be valuable for reference. *Tempora mutantur et nos in illis mutamur!* Gynecology now rests upon a purely anatomical basis. Every theory, every method of treatment is rigidly tested by the standard of anatomical facts. The prevailing critical spirit is so keen that it is impossible for a writer to conceal flaws in his arguments beneath either the shadow of his personal reputation or the charms of his literary style. Glittering generalities find no place in the present system of medical instruction. The excellent manual of the two Edinburgh gynecologists owes its permanent popularity to this very change in the attitude of medical students and teachers—certainly not to either its literary excellence or to its subject-matter, which is condensed almost to the point of obscurity. It is professedly an exponent of pelvic anatomy as applied to the treatment of diseases of women; it makes no pretensions, but at every step appeals to facts. Whatever may be the future of the last edition of Thomas's *Diseases of Women*, one thing is certain—it will always remain a lasting monument to the energy of one of the most finished medical writers and brilliant and successful teachers of the century, their obligation to whom is gratefully acknowledged by hundreds of practitioners. Books and men grow old rapidly in this rushing age. There is not even a survival of the fittest; there is no survival at all. Another decade will see vast changes in the science and art of gynecology; the younger generation will, as they do now, criticise complacently the errors of their elders, but they will doubtless do well to remember that “there were giants in those days.”

H. C. C.

CLINICAL MANUAL FOR THE STUDY OF MEDICAL CASES. Edited by JAMES FINLAYSON, M.D., Lecturer on Clinical Medicine in the Glasgow Western Infirmary; Physician to the Glasgow Western Infirmary and to the Royal Hospital for Sick Children; Honorary Librarian to the Faculty of Physicians and Surgeons, Glasgow, etc. Third edition. London: Smith, Elder & Co., 1891.

THE manual is written especially from the standpoint of the clinician, and the authors follow closely throughout the work the idea of stating facts in such a manner that aid will be given the reader in the actual study of cases. Therapeutic measures are not considered; the book is one of differential diagnosis and symptomatology, and gives in a brief and clear manner the usual significance which attends physical signs

and symptoms, subjective and objective, as well as the method to be followed in order to arrive at a differential diagnosis. Throughout the manual numerous tables are given which afford a ready means of assistance in differentiating allied or similarly appearing diseases.

Special stress is laid upon etiology. The point is made, for instance, in neuralgia of not labelling a pain neuralgic when the involvement of the nerve may be secondary to some definite disease either general or local, as anæmia, malaria, or a wounded nerve.

The author, in considering a symptom, as lividity or duskiness in dyspnœa, page 351, describes first its usual sites, then its causation, and, finally, in a clear and concise manner, its connection with and significance in various diseased conditions; but no exhaustive recital or minute description of the various diseases with which dyspnœa is associated is attempted. In the same manner the clinical significance, for instance of paralysis in the various forms in which it appears—hemiplegia, paraplegia, monoplegia, lead palsy, etc.—is clearly pointed out.

The chapter on the "Physiognomy of Disease," contributed by W. T. Gairdner, M.D., LL.D., is of special interest to the practitioner; the various cachexiæ, syphilitic, rickety, dropsical, gouty, strumous, etc., are considered. In those diseases in which the mental functions are impaired, it is shown that almost every distinct type of insane aberration has its peculiar physiognomy; while in infancy and early childhood the author claims, and with what to us seems good reason, that unless in the case of positive physical signs directly bearing on the state of the internal organs, the physiognomony of disease in children constitutes by far the most important aspect of diagnosis.

Chapter III., on "Temperature, Pulse, General Signs of Pyrexia," contains numerous temperature charts which are of interest, also tracings showing the influence of respiration on the pulse in healthy and diseased conditions. The point insisted upon of retaining the thermometer in position until the mercury maintains the same level for about three minutes, seems to us to be, while perhaps occasionally required, often disadvantageous to the patient and uncalled for. In all febrile conditions any position if insisted upon quickly becomes irksome, and in children is often followed by a varying interval of unrest and disquietude.

In a book which is edited by such an able clinician as Dr. Finlayson, we naturally turn with interest to Chapter IX., which is devoted to "Disorders of the Respiratory and Circulatory Systems." The author here shows at his best. Various symptoms, as dyspnœa, orthopnœa, palpitation, angina pectoris, Cheyne-Stokes respiration, cough, expectoration, and hæmoptysis, are carefully considered from a clinical standpoint, and their significance both as regards their diagnostic and prognostic importance is clearly and briefly explained. The portion of this chapter devoted to the microscopical examination of sputum, with the carefully selected methods and definite information given in regard to the different methods of staining, will be of special value to the ordinary American third-year student; while the importance of the use of the hæmoglobinometer and hæmacytometer for the purpose of diagnosis, prognosis, and treatment, which is so often largely neglected in many modern textbooks, is considered in detail.

The "Derangement of the Digestive Functions," in diseases of a general nature as well as in local affections of the digestive organs themselves,

is discussed in Chapter XI. Special attention is paid to the complexity in the etiology of digestive disorders, and the consequent necessity of a careful investigation of the different groups of symptoms in respect to duration, proximate cause, association, and relative date of the symptom in question. The macroscopical and microscopical examination of vomited matters is considered in a practical and condensed manner, as is also the significance of the appearance of the stools as regards color, presence or absence of mucus, blood, and pus. The value of the microscopic examination in this connection is pointed out.

The last hundred pages, Chapter XVI., are taken up with "The Physical Examination of the Chest and Abdomen." The portion devoted to sounds of the heart, normal and abnormal, is profusely illustrated with drawings, sphygmographic and cardiographic tracings. This portion of the work has been prepared with more care and regard for minute details than any other portion of the manual, and will be more interesting to the scientific physician than to the daily practitioner.

We note with regret that the book before us does not contain the chapter devoted to post-mortem examinations which appeared in the earlier edition, and its omission is a positive loss to the medical student, for whom the manual is largely intended. The importance of the knowledge derived from this method of research is too apt to be neglected, and the chapter contained information of positive value to every student of medicine.

E. E. G.

DISEASES OF THE SKIN. A MANUAL FOR PRACTITIONERS AND STUDENTS.

By W. ALLAN JAMIESON, M.D., F.R.C.P. Edin., Extra Physician for Diseases of the Skin, Edinburgh Royal Infirmary, etc. Third edition, revised and enlarged. With woodcuts and nine colored illustrations. Philadelphia: Lea Brothers & Co., 1892.

THE first edition of this treatise appeared in the year 1888, and met with deserved favor. The author had, for some time before, commended himself to American practitioners and students interested in cutaneous medicine by his painstaking work in connection with the general subject. He had long collated for the Edinburgh medical press the work of the leading experts of the continent of Europe in the department of dermatology. He was thus well prepared to write, not from the possibly limited experience of a practitioner in a town of scarcely more than three hundred thousand inhabitants, but with some observation of a wider field.

The present edition is improved by revision, evidently made in many parts with care, as also by the new material added on the subjects of dermatitis herpetiformis (where it is gratifying to note that the long years of labor of our own Duhring have at last received just recognition), of pityriasis maculata, of lymphangioma circumscripsum, of pityriasis rubra pilaris, of xanthoma diabeticorum, and of lepra.

Considering the relative frequency and importance of recognition of the pityriasis rosea of Gilbert, or, as Americans term it, pityriasis maculata et circinata, it is surprising that in so voluminous a work as the present our author has not thought fit to devote to it more space than

a scant page. One is, indeed, here led to suspect that it has been recognized less often in Scotland than in other countries. Jamieson scarcely seems to be aware that this affection actually belongs to the class of exanthematous fevers, since one may often detect with the thermometer, in the subject of the malady, febrile temperatures. Its somewhat prolonged, if not complicated and formidable, phenomena occur in a cycle, almost invariably accompanied by a feeling of languor and malaise on the part of the patient, in whose case, apart from the moderate pruritus awakened, the systemic symptoms are often those most significant. We find, moreover, in these few lines no naming of the distinctly fawn-colored or "mackerel-tinted" shade, giving the oval or circular patches such a striking physical peculiarity that, once recognized, they can scarcely be mistaken for patches of psoriasis, or those of syphilis, between whose symptoms and those of pityriasis rosea our author establishes a scarcely needed distinction. The malady must be better known among Englishmen, for Crocker, in his treatise of nearly similar size, devotes about four times as much space to its consideration in an exceedingly lucid sketch of its symptoms.

Perhaps we may forgive our author for slighting to a similar degree the much vexed question of pityriasis rubra pilaris and its relations to the lichen ruber of some American and some German contributors. In a trifle more than a couple of pages are here discussed the conditions which have brought those pens into requisition, which, after such great toil, have actually established such a very moderate number of facts. Taylor's well-illustrated report of cases published under the distinctive title of "lichen ruber" is here cited as illustrative of a well-marked pityriasis rubra pilaris, a view expressed in the controversial paper on the subject by Hans Hebra, but one which will scarcely please the American author, nor, indeed, be readily accepted by those who have had the opportunity of carefully studying the Baretta models of the last-named disease in the collection of the St. Louis Hospital. The truth is, Jamieson has done his readers some service in sparing them the details of a controversy which is yet not satisfactorily concluded, but which may perhaps be decided in the future with the establishment of distinctions which at the present day are not accepted in the French school.

Dr. Jamieson's treatise is really a useful, instructive, and valuable contribution to the bookshelves of the practitioner and the student. It is not, rigorously estimated, one which falls into line with the standard treatises in any department of medicine. These only meet modern requirements if they be terse, rigidly systematic, comprehensive, and of cyclopædic quality for purposes of reference. The work before us is not of such an order. It is distended with reports of cases for the most part illustrating admirably the themes discussed, but which impart to the whole the features of a clinical essay. Indeed, the author has, to a marked degree, the style which once made popular the writings of Watson, Paget, and other contemporary contributors to British medical literature. It has a charm of its own; and one reads its lines with a zest that cannot be imparted by the details of a digest, or by the paragraphs of a reference handbook. It is chiefly to be criticised, from an American point of view, for the unrestraint with which, as is common with so many of his countrymen, are given the names, street-numbers, and places of business of certain dealers in articles advised for the management of cutaneous disease, such persons being presumably finan-

cially benefited by this sort of advertising. Even a few enterprising American tradesmen do not go here unrewarded.

The treatise is to be commended as an excellent work for reading in connection with systematic study of the subjects discussed.

J. N. H.

MANUAL OF PHYSICAL DIAGNOSIS, FOR THE USE OF STUDENTS AND PHYSICIANS. By JAMES TYSON, M.D., Professor of Clinical Medicine in the University of Pennsylvania and Physician to the University Hospital; Fellow of the College of Physicians of Philadelphia; Member of the Association of American Physicians, etc. Pp. 136. Philadelphia: P. Blakiston, Son & Co., 1891.

THERE are so many excellent manuals of Physical Diagnosis that the only good reason for adding to the number is that every teacher feels the need of a book which exactly corresponds to the individuality of his methods. The present volume is by a clinical teacher of much experience and a practitioner of well-known ability, so that his work has a value outside of a class of undergraduates. The scope is limited. Except thoracic aneurism the only diseased conditions considered are those of the lungs and the heart; therefore, it would be advisable either to limit the title or to consider the physical exploration of kidney, liver, spleen, and stomach. The diseases of these organs fall within the province of the ordinary practitioner.

The author approaches his subject from a practical point of view, and the little work will prove a good friend to the student. A part of its value comes from its inexpensive make up.

G. E. S.

CONSUMPTION: HOW TO PREVENT IT AND HOW TO LIVE WITH IT. ITS NATURE, ITS CAUSES, ITS PREVENTION, AND THE MODE OF LIFE, CLIMATE, EXERCISE, FOOD, AND CLOTHING NECESSARY FOR ITS CURE. By N. S. DAVIS, JR., A.M., M.D., Professor of Principles and Practice of Medicine, Chicago Medical College; Physician to Mercy Hospital, etc. 12mo., pp. viii, 143. Philadelphia and London: F. A. Davis, 1891.

TUBERCULOSIS AND ITS SUCCESSFUL TREATMENT. By ROBERT BELL, M.D., F.R.P.S., etc. Medical Referee for the National Hospital for Consumption, Ventnor; Senior Physician to the Glasgow Hospital for Diseases Peculiar to Women; Vice-President of the British Gynecological Society, etc. 12mo., pp. 60. Glasgow: David Bryce & Son, 1892.

THE little book of Dr. Davis is timely and useful. If we except Richardson's great works on *The Field of Disease* and *The Common Health*, no popular essay so useful has appeared in the English language since Beddoes' publications on *The Prevention of Disease*, a hundred years ago.

In a concise, lucid, and thorough manner the author sets forth the principal elements of the prophylaxis and hygienic management of pulmonary tuberculosis. We do not entirely agree with him in details, but the points of difference are not all of major importance. In the

matter of diet we would lay greater stress upon the necessity for nitrogenous food, and would make less use of carbohydrates.

The book grew out of the difficulty the author had experienced in impressing upon consumptives, in necessarily brief conversation, the necessity of rigidly executing these sanitary rules, the fulfilment of which is so essential to successful treatment. He, therefore, prepared a series of written rules and a brief explanation of the effect of their execution. From these the book has grown.

Physicians will do their patients a service by placing this book in their hands. In no other way can fitting acknowledgment be made of the great obligation under which the author has placed the profession and the community by writing it.

The object of Dr. Bell's brochure is to urge the use of calcium chloride in the treatment of tuberculosis. It is written in a tautological, rambling, and inconsequential style, with speculative interpolations concerning the etiology of tuberculosis and invectives against the effect of "Kochism."

While far from being a specific, there is no doubt that calcium chloride is a useful remedy in certain cases of tuberculosis, and especially in the management of children exhibiting evidences of what we are wont to term "scrofula." In the medicinal treatment of enlarged lymphatic glands, the reviewer knows of no agent equal to this drug. Dr. Bell is unquestionably entitled to great credit for his persistence in advocating its use, but the honor of introducing it into English practice belongs to Thomas Beddoes, the father of pneumatic medicine and of the rational treatment of tuberculosis. S. S. C.

EPIDEMIC INFLUENZA: NOTES ON ITS ORIGIN AND METHOD OF SPREAD.

By RICHARD SISLEY, M.D., M.R.C.P. Pp. 150. London and New York: Longmans, Green & Co., 1891.

ANY effort directed toward limiting the spread of a disease the visitations of which in previous epidemics and in those of very recent date have created such widespread havoc deserves commendation. Therefore these somewhat verbose "notes," which were apparently prepared with the prime object of indicating the importance of the compulsory notification of influenza, because of the preponderating evidence existing, and here partly presented, in favor of its contagiousness, should have a favorable reception and be carefully read by those who have not yet awakened to the fact that this affection can be communicated by contact. The author deals with this part of the subject in a convincing manner. It is to be regretted that his style is characterized by a constant tendency toward diffuseness, which needlessly consumes the time of the reader in arriving at the essence of the subject, and renders the book of greater size than the matter at hand warrants. It seems rather incongruous to devote five pages of a small brochure to the nomenclature of influenza, or to occupy several pages in the discussion of rather unimportant data which at the same time are sufficiently considered in marginal explanatory notes. Apart from these imperfections in style, which, indeed, are quite venial, as they do not especially militate against the usefulness of the pamphlet, and are perhaps indicative both of juvenility in literature and a pardonable enthusiasm on a subject about which it is felt too much cannot be said, the book merits praise. D. D. S.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D.,

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HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

THE TREATMENT OF TABES DORSALIS BY THE METHOD OF BONUZZI.

In the *Revue de Thérapeutique Générale et Thermale*, 1892, No. 2, p. 25, we find a clear and concise statement of this method, which, it is hoped, will yield results as satisfactory as those attributed to suspension, without, however, exposing the patient to the same dangers, nor indeed requiring the use of any apparatus whatsoever. The experiments upon the cadaver have shown that the mechanical distention undergone by the spinal cord is three times as great in this method as in suspension. The patient lies upon the back, head maintained in an elevated position by means of a bolster. The lower extremities are flexed upon the body through a semicircle, the knees being placed upon the chest of the patient, the legs being held straight; the operator, seizing the diverging ankles, carries them strongly toward the floor. The result is, that the vertebral column is strongly flexed forward. This position must be attained with care, for it gives rise to backaches and swellings of the posterior aspects of the thighs, due to intra-muscular hemorrhage. Benedikt reports a case where attacks of syncope and vomiting for many hours, with adynamia for several days, followed this treatment. It also has a greater effect upon respiration and circulation than does suspension; but the distention to which one subjects the trunk and limbs can be readily graduated, and, if necessary, it can be immediately terminated. Benedikt reports that the gait of the patients was greatly improved, and the neuralgias markedly and constantly relieved.

THE MANAGEMENT AND CARE OF PATIENTS WITH HEMIPLEGIA.

DR. WILLIAM M. LESZYNSKY contributes a valuable paper in the *New York Medical Journal*, 1892, vol. iv. p. 202. Rest to be insisted upon; evacua-

tion of bowels and bladder; avoid bedsores by the application of a 25 per cent. solution of oxide of zinc in alcohol to the suspected part; early passive motion; electricity (faradization) after four to six weeks; if contractures, then galvanization (negative pole on nerve-trunks), the most potent remedy being a combination of the "essence of patience" and the "tincture of time." As prophylactic measures: avoid muscular overstraining, reduce nitrogenous food, keep bowels free, diminish high arterial tension, remembering that much depends upon the coöperation, self-denial, and self-control of the patient.

THE ELECTRIC DOUCHE.

DR. W. S. HEDLEY, believing that the action of electrized water by means of the electric bath is the least painful way of applying the current to the body, uses a movable jet douche, obtaining his electricity from a seventy-four cell Leclanché battery with a milliampère-meter in the circuit. With salt water he could obtain a stronger current. It seems not unreasonable that with combined electric and hydropathic procedures we have a therapeutic agent of considerable power.—*Lancet*, 1892, No. 3574, p. 469.

PHENYL URETHAN.

M. ED. ÉGASSE has studied this substance, to which Giacomini gave the name of Euphorine (*Bulletin Générale de Thérapeutique*, 1892, 2e. liv., p. 19). It occurs in crystals, slightly soluble in cold, more so in hot water, but soluble in all proportions in ether and alcohol. Therapeutically, it is an energetic antipyretic without any danger, but indeed a beneficial effect upon the general condition. The dose is about seven and one-half grains, which will reduce the temperature, commencing in from twenty to forty minutes, one to three degrees (centigrade), and this defervescence lasts from four to twelve hours. The mechanism is like that of other antipyretics—by vasomotor dilatation. Profuse sweating is a usual accompaniment of this reduction of temperature.

According to Santoni, it is an anti-rheumatic in doses of fifteen to twenty-two grains. As an analgesic the results have been variable and generally unfavorable, with the exception of nervous headache. As a local antiseptic, in inveterate varicose ulcers, as a 10 per cent. ointment Oliva has had satisfactory results. In dermatological practice, Peroni has found that it presents marked advantages over iodol, sozo-iodol, aristol, resorcin, and chloral hydrate, in that it arrests suppuration, destroys odor, stimulates granulations, prevents the diffusion of virus from venereal ulcers. Internally, it can be administered in wafers, but, on account of the burning sensation which it produces in the stomach, these should be avoided. Better is it to dissolve the remedy in Malaga or Marsala wine. For use externally, the sharp crystals must be powdered or dissolved in alcohol, 10 to 50 per cent.

TEUCRIUM SCORDIUM IN PRURITUS ANI.

DR. JOHN H. BRINTON (*Therapeutic Gazette*, 1892, No. 1, p. 3) has observed that in certain obstinate and intractable cases of this disease, when the symp-

toms are absent during the day but appear as soon as the patient is warm in bed, this remedy, recommended by Dr. André Lebel, is valuable. He uses the powdered leaf of the wild germandra, a plant of Southern Europe. The dose is ten to twelve grains, suspended in water, taken three times a day, about half an hour before meals. The powder looks and tastes like a form of pepper, is an active stomachic, and stimulates the appetite. Great relief follows its exhibition for a week or ten days. In advanced cases of itching with hæmorrhoids it is not of much value, being curative only in the initial period of the disease and in the disturbed neurotic condition.

THE TREATMENT OF MIGRAINE.

DR. SAVIGNY believes that the etiological conditions must be considered. Those predisposed to this disease are the neuropathics, gouty, rheumatics, diabetics, and anæmics. Constipation is an important adjuvant condition. The use of narcotics (morphine hypodermatically) is objectionable, in that it causes vomiting, is only palliative and not curative, and increases the constipation. Chloral only fulfils a symptomatic indication. The analgesics, salicylic acid, antipyrine, exalgine, acetanilide, and indeed sulphate of quinine, yield cures, but often relapses quickly follow. Haig, believing that in gouty subjects there is a connection between this and an increased excretion of uric acid, uses large doses of citric or nitro-muriatic acid. He believes that antipyrine acts in the same way. A nitrogenous diet, meat, cheese, and beer, should be forbidden. By its chemical acid the good effects of chloride of soda are explained (Batom, Nothnagel, Rabod); this, however, has been useless if there exists a gastralgia. The treatment between the attacks may be the reduction of obesity (method of Oertel), hydrotherapy, total rest, physical and intellectual, before a cold bath, with physical exercise afterward, or if the bath is a hot one, followed by rest (procedure of Pelezeus). For the attack itself, Dunn has used cocaine hypodermatically, although it often causes insomnia, agitation, exaggerated reflexes, rapid pulse, palpitation. Rossbach believes in the value of local massage. Neftel uses hot water to increase transpiration, muscular exercise, improvement of the general condition. Morris Lewis uses ten drops of the tincture of eucalyptus four to six times daily, while Gill Wylie has prescribed with success a grain of ox-gall and a drop of essence of gaultheria six times daily. The author employs caffein and bromide of ammonium in peppermint water, every two hours during the attack, recommending, in addition, electricity, either static or galvanic, with general faradization.—*Revue de Thérapeutique Médico-Chirurgicale*, 1892, No. 4, p. 94.

BRADYCARDIA AND THE ACTION OF ATROPINE.

In the *St. Petersburger medicinische Wochenschrift*, 1892, No. 1, S. 1, PROF. KARL DEHIO shows that by the use of atropine we can readily differentiate between the cases of bradycardia due to vagus irritation and those of the automatic motor apparatus, since this remedy paralyzes the vagus endings in the heart. The four recorded instances show clearly that this method is a valuable one. In studying the association of such anatomical changes as

fatty degeneration, fibrous myocarditis, sclerosis of coronary arteries, thrombotic myo-malacia, he believes that these conditions are more often present without than with bradycardia. It was further noted that the older the individual the less was the acceleration which was produced by atropine.

ATROPINE AND MORPHINE.

H. UNVERRICHT (*Centralblatt für klinische Medicin*, 1892, No. 3, S. 49) attacks the position assumed by Binz, that atropine is an antagonist to morphine so far as the cerebral cortex and the respiratory apparatus are concerned. He believes that atropine is not a stimulant for the normal respiratory apparatus, basing this conclusion upon the laboratory work of Orłowski.

THE ARSENICAL SPRINGS OF LA BOURBOULE.

DR. A. W. GILCHRIST, in the *Climatologist*, 1892, No. 1, p. 2, gives a temperate statement of the value of these waters in the treatment of lymphatism, struma, and scrofula, chronic diseases of the skin ("herpetic" of the French writers), syphilis, anæmia and chlorosis, malaria, diabetes, affections of the throat and respiratory passages, gout, and chronic rheumatism.

[We believe that these waters are worthy of a more careful study by the American profession, and that a visit to interesting Auvergne would be of more value, in carefully selected cases, than to other better known resorts.—R. W. W.]

THE TREATMENT OF SYPHILIS BY MERCURIALS.

The *Centralblatt für die gesammte Therapie*, 1892, No. 1, S. 1, contains a notable paper by PROF. EDUARD LANG, in which he also discusses the question of nephritis in luetic subjects. The nephritis in early stages of syphilis can be either an infectious or a syphilo-toxic nephritis; in either case there is a call for an antisymphilitic, often indeed a mercurial treatment. In late syphilis, the nephritis may be of mercurial-toxic origin. Of course, the possibility of the nephritis antedating the syphilis, or being independent of it, must always be considered. From the results of observation it is certain that mercury may give rise to a nephritis.

It is important that the dose should be absolutely known, and such preparations as those in which the drug is not kept evenly disseminated through the menstruum should be avoided. Inasmuch as stomatitis may go on to gangrene and formation of scar-tissue and a mercurial entero-colitis may be set up, it is fair to presume that renal degeneration which is beyond repair may follow the administration of mercury, particularly when it is in unusual doses, although even small ones will at times produce these untoward results. As the best method he uses *oleum cinereum* in 50 per cent. solution, of which he uses one drop subcutaneously, to be repeated at intervals of five to seven days. In the first week, however, three doses up to one drop are given. Eight to sixteen treatments are necessary for cure. With this method relapses are less frequent and of moderate severity.

[*Oleum cinereum* (gray oil), introduced by Lang in 1886, is prepared by rubbing one part of lanolin with considerable chloroform to emulsion, thor-

oughly triturating the mixture, the chloroform evaporating during the process. While it is fluid two parts of metallic mercury are added, and the trituration continued. As a salve it is diluted with fresh almond or olive oil to the required mercurial percentage.—R. W. W.]

SEVERE ACCIDENTS OF IODISM.

An unsigned paper in *La Semaine Médicale*, 1892, No. 5, p. xviii, gives an excellent account of our present knowledge upon this subject. Œdema of the glottis, of the same kind as serous infiltration of the eyelids, has easily caused death. In instances when at death the body has been covered by a pemphigus, a nephritis has generally been found. At times, even when death has resulted from œdema of the glottis, this renal condition has not been found. Curiously enough the doses which have been followed by œdema of the glottis have been, in general, small (six and one-half grains, Fournier). Attempts have been made to avoid such symptoms as œdema, coryza, headache, conjunctivitis, and epiphora, by its exhibition in milk, or the administration with belladonna, or bromide of potash. Following the method of Röhmman and Malachowski, it is believed that the bicarbonate of soda will prevent these untoward symptoms, by rendering the blood more alkaline, which will hinder the setting free of the iodine of the iodide of potash. It is given in two daily doses to the amount of seventy to ninety grains. In all cases the integrity of the renal filter should be assured, although even in actual renal disease, as chronic interstitial nephritis, we may receive great benefit from this drug. While disease of these organs is not an absolute contra-indication, yet it should be administered in the usual (not small) doses, and at the outset, preferably with the bicarbonate of soda.

NEW OBSERVATIONS ON THE PHYSIOLOGICAL ACTION OF THE MERCURIALS AND IODIDES.

In *Merck's Bulletin*, 1892, No. 1, p. 3, DR. WILLIAM HENRY PORTER attempts to find a clear and rational physiological explanation for the good effects that are known to follow when these substances are introduced into the system as medicinal agents. He believes that these inorganic compounds, taken into the body in excess of the absolute demands of the physiological economy, act as foreign bodies, and in this way become universally irritants to the system. To remove this element the system is called upon to make abnormally great exertions, and in attempting this extra amount of work there is at once a demand on the part of the physiological economy for a larger nutritive supply to accomplish this excessive amount of work. If the foreign body can be eliminated from the system, and a sufficient nutritive pabulum supplied and assimilated to sustain this increased demand upon the vital expenditures, the system is in this indirect manner generally improved in its nutritive vitality. He concludes that the inorganic compounds are not chemically decomposed in the system, but act by their mechanical presence; that the action of the mercurials and iodides is governed by the same general chemical and physiological laws, and that they act in a similar manner; that the urine should be carefully watched and

absorbed. He orders the oil to be taken with mashed potato, or spinach, or salad, or even with some kinds of fish.

THE CONDITIONS OF CURE IN CONSUMPTION.

DR. I. BURNES YEO, in the *British Medical Journal*, 1892, No. 1620, p. 106, in commenting upon the well-known fact that in persons dying of other diseases there are numerous instances where anatomical evidence is discovered of arrested and cured pulmonary tuberculosis, yet is compelled to admit that as we meet it in its clinical forms it is rarely cured. An early diagnosis is essential, based on slight modifications of respiratory sounds, accompanied by some evidences of disturbance of general health. Early hæmoptysis is favorable to cure, because it assists an early diagnosis. Also favorable is the tendency toward fibrous changes, as well as a lack of irritability of the tissues, that absence of tendency toward acute inflammation, the possession of a sound constitution; possibly, also, the mitigated virulence of the bacillary infecting agent, a sound condition of the organs of digestion and assimilation. The therapeutic conditions which favor cure are: attention to detail in feeding (*sur-alimentation*); life in the open air of the country or by the sea; a dry, pure atmosphere, not necessarily a cold one. Among antiseptics, none are so uniformly beneficial as are creasote or guaiacol.

POISONING BY MALE FERN.

In the *Prager medicinische Wochenschrift*, 1892, No. 5, S. 43, and No. 6, S. 57, is found a medico-legal review of this subject, by PROF. A. PALTAF. The symptoms are chiefly of irritation and inflammation in the digestive system, disturbance of the respiratory and circulatory systems, with very marked impression upon the brain and spinal cord. He reports a carefully observed case, with results of post-mortem and chemical and microscopical investigation. Apparently the number of cases of poisoning has increased since the ethereal extract has been more extensively used but the doses have not been unusual ones. It is likely, also, that the administration in olive or castor oil may give rise to poisonous effects. Further, there may also exist an idiosyncrasy of the patient himself.

IODOFORM POISONING.

In the *Berliner klinische Wochenschrift*, 1892, No. 7, S. 142, appears a paper by DR. P. NAECKE, reporting an instance occurring in his own person. The symptoms were paraphasia, without hallucinations, weakness of power of thought and intelligence, forgetfulness, depression of spirits, melancholia, agrypnia, hypochondriasis. After these symptoms had persisted for two months he entered a sanitarium, where he recovered after eight weeks' treatment. A month later he again commenced his work.

CODEIA POISONING; RECOVERY.

DR. C. METTENHEIMER sounds a note of warning that the use of this remedy for catarrhal disease of the respiratory tract may not be without

danger. A patient was directed to take a half-grain pill every three hours. She took, however, four pills at once, which produced violent vomiting, pain in abdomen without passage, retention of urine; general condition bad; great drowsiness—without sleep, however. The next day there was myosis; heart and respiration rapid, the latter possibly being due to anxiety. Complete recovery followed within three days.—*Memorabilien*, 1891, 3. Heft, S. 136.

ARISTOL FOR VENEREAL ULCERS.

DR. T. EDMUND GÜNTZ, in *Memorabilien*, 1891, 2. Heft, S. 65, gives the results of two years' use of this remedy. He employs the powder dusted over the ulcer, and renders the medicament soluble by dropping upon it a small quantity of olive oil from a glass rod, so that it is evenly distributed through the powder and does not form masses, when it is to be covered by a bit of protective. This dressing is to be changed twice daily. Aristol succeeds better with syphilitic ulcerations than with so-called chaneroids.

ALCOHOLISM AND TUBERCULOSIS.

DR. HECTOR W. G. MACKENZIE believes that tubercle is more frequent among the alcoholics than is usually believed. The commoner type of alcoholic phthisis is a combination of excavation with broncho-pneumonic consolidation, the fibroid change being the rarer form. Alcoholism is a very frequent antecedent when there is not inherited susceptibility to tubercle. The condition of the patient is generally worse than would be expected from the amount of disease revealed by physical examination; the progress of the disease is more rapid, and the prognosis particularly unfavorable. Alcoholic drink in excess, so far from being a preventive, has an influence in the opposite direction.—*British Medical Journal*, 1892, No. 1626, p. 433.

[These observations are important, in view of the fact that alcoholic stimulants are so frequently prescribed in large doses and for considerable periods of time in tubercular patients.—R. W. W.]

ACONITE POISONING; RECOVERY.

DR. G. H. TUTTLE reports a case of recovery after ingestion of seven and one-half drachms of this tincture. Medical assistance was obtained in forty-five minutes. Hypodermatic injections of brandy and twenty drops of tincture of digitalis; injections *per rectum* of twenty drops each of tincture of digitalis and nux vomica, with brandy; ether and ammonia to the nose; digitalis and brandy was continued in smaller doses. After four hours the patient complained of burning pain in the stomach. Three days afterward the patient was able to be about and to do light work.—*Boston Medical and Surgical Journal*, 1891, No. 26, p. 678.

PIPERAZIN.

DRS. BIESENTHAL and ALBR. SCHMIDT (*Berliner klinische Wochenschrift*, 1892, No. 2, S. 28) conclude from clinical observations that it is more valuable than any known remedy to dissolve uric acid and its concretions; being

slightly absorbed from the stomach, it reaches the substance to be dissolved practically unchanged; it is best given in dilute solution—in soda-water—fifteen grammes daily. Its taste is not unpleasant; in proportion of 1 to 500 parts of soda-water it is not detected. It does not irritate mucous membranes. Its easy solubility permits subcutaneous injection into tophi. A 1 or 2 per cent. solution in one part of spirit and four of water, used as a Priessnitz's compress, is valuable for gouty swellings. It acts not only upon uric acid, but also upon phosphatic and oxalic acid calculi.

CORONILLA.

M. V. POULET (*Bulletin Général de Thérapeutique*, 1891, No. 46, p. 481) gives the result of his studies. The tincture of the entire plant was used in daily dosage of from one to two and a half drachms, believing that it was valuable in paroxysmal tachycardia, in the painful phenomena of certain reflex cardiopathies, in the disorders occasioned by changes at the aortic orifice; it relieves the symptoms due to lesions of the mitral valve; that it cuts short, frequently in a remarkable manner, the attacks of cardiac or bronchial asthma; it increases the appetite; is a tonic so far as the alimentary canal and general system are concerned. It is superior to digitalis in that it does not have a cumulative action, is not a depressant, nor does it give rise to digestive disturbances. Its chief value seems to be in the nervous affections (erethism) of the heart, whether primary, or secondary to a general neurosis, particularly in cardiac disturbance due to excess in venery, tobacco, coffee, or alcohol.

The following papers are worthy of notice:

"On Fissures of the Bladder Mucous Membrane in Women," by DR. T. HEITZMANN (*Centralblatt für die gesammte Therapie*, 1892, No. 2, S. 65). Examination with endoscope. Cure of catarrh of bladder by weak solutions of permanganate of potash, boracic or salicylic acid. Local treatment of fissure by application of cotton wet with solution of nitrate of silver, sulphate of zinc or copper. Support to uterus and bladder by glycerin tampons in vagina.

"Comparative Value of the Digitalins of Commerce," by DR. J. FOUQUET (*Bulletin générale de Thérapeutique*, 1892, 4e. liv., p. 71). A laboratory study in frogs, rabbits, and dogs. He concludes that digitalin represents all the properties of the plant. Commercial digitalins contain other principles, more or less active, besides this. Those digitalins soluble in chloroform and insoluble in water have the same action, and should be employed by the physician, preference being given to crystallized digitalin, which should be given in one dose of one sixty-fourth of a grain. On the next day or day after, if the diuresis is insufficient, it can be repeated in one-half or full dose, but not to be continued, because of cumulative effects.

"Chloroformization with Small and Continuous Doses," by DR. MARCEL BAUDOUIN, in a reprint from *Gazette des Hôpitaux*, 1892, pp. 88; method of Dr. Léon Labbé, quoting the *Mémoires* of M. Peyraud. An accurate and painstaking monograph, presenting a forcible argument for the adoption of this method.

"Treatment of Mitral Insufficiency." A paper based upon a lecture by PROF. DIEULAFOY (*Revue de Thérapeutique Générale et Thermale*, 1892, No. 3, p. 33). Carefully prepared and concise.

"Therapeutic Use of the Salts of Strontium," by DR. G. BARDET (*Nouveaux Remèdes*, 1892, No. 3, p. 52). A *résumé* of existing knowledge, giving the chemistry, pharmacology, and therapeutics, with formulæ.

"Massage in Medical Diseases," by DR. ERNEST BARIÉ (*Revue générale de Chirurgie et de Thérapeutique*, 1892, No. 2, p. 18). Mentions rheumatic arthropathies, muscular rheumatism, neuralgias, dilatation of stomach, and constipation. Moderate in tone.

"Pental," by DR. E. WEBER (*Münchener medicinische Wochenschrift*, 1892, No. 7, S. 105). Chemistry, with brief clinical report.

"Oxygen and Strychnine in Respiratory Troubles," by DR. COUPER CRIPPS (*British Medical Journal*, 1892, No. 1626, p. 436). Case of pneumonia, secondary to influenza, recovered by energetic use of these remedies.

"Influenza Pneumonia Treated by the External Application of Cold," by MR. WM. GORDON (*Lancet*, 1892, No. 3574, p. 466). Fenwick's ice-pail method; patient had also salol, liq. ammon. acet., chloral, and laudanum.

MEDICINE.

UNDER THE CHARGE OF

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A CASE OF SYRINGOMYELUS.

DRS. HUGHLINGS JACKSON and GALLOWAY record the following case of this disorder in the *Lancet*, 1892, No. 3573:

The patient is a stout, healthy-looking woman of forty-nine years, whose grandfather died at an advanced age, suffering from a nervous disease that caused contraction of the lower extremities. She has eight healthy children. At twelve years of age she was treated at St. Louis, Mo., for a deep cut on the extensor surface of the right forearm. Twenty-two years ago she had an attack of "sunstroke" while in the garden on a hot summer afternoon; she was unconscious for two hours. After this attack she gradually lost sensation in the right arm and hand, and on the right side of the body. She soon observed loss of power in the forearm and hand, affecting chiefly the third, fourth, and fifth digits, and became awkward at work and easily fatigued. Fifteen years ago she received a severe scald on the right fore-

arm, and her attention was especially directed to the loss of sensation. Since that time she has frequently burnt and otherwise injured her right fingers and arms, being unable to feel that water was too hot to wash in. Twelve years ago she sustained a lacerated wound of the right elbow, attended by much inflammation, and giving rise to an axillary abscess. For two and a half years at least, the third, fourth, and sixth fingers have been stiff and contracted.

Eight months ago, while wringing out clothes, something cracked in her right elbow and she had to stop work on account of the pain on movement. The same night the right elbow swelled greatly and remained large for many months. She says the elbow became "dropsical."

When first seen her condition was as follows: "The right elbow and forearm are considerably larger than the left. The right elbow-joint is quite disorganized, and there is some, though not excessive, osteophytic growth in the neighborhood of the joint. The forearm can be moved laterally at the joint for about a quarter of an inch with much grating. Movements at the elbow cause a little discomfort, but little or no pain; complete extension is impossible on account of the altered relations of the joint surfaces; the other movements are abnormally free, and are attended with grating in the joint. The right wrist has also been somewhat swollen, and slight grating can be obtained on movement. The third, fourth, and fifth digits of the right hand are permanently flexed and contracted, the second and first digits show similar changes, but not to the same extent. Wasting of the thenar, hypothernar, and interossei muscles is well marked."

Electrical reactions of the affected muscles revealed diminished excitability to both constant and interrupted currents, but no qualitative changes in reaction. Over an area including the front and back of the right upper extremity, the right side of the scalp, face and neck, and the right side of the trunk to the level of the tenth dorsal vertebra, there was marked alteration in sensation. Thus, she could not distinguish between a touch with the finger and the prick of a pin, or heat from cold. The muscular sense in the arm was retained. The limit of altered sensation was sharply defined below and in the middle line. Sensation in the mucous membranes was affected in a similar fashion. The sense of smell appeared less acute with the right than with the left nostril. Sight and hearing were normal. The lower extremities were unaffected. The case emphasizes the fact that the lesion characteristic of syringomyelus, which is apparently of congenital origin, may exist for long in the cord, simply as a deformity, without causing evident symptoms. The affection of the head and neck is somewhat rare. The occurrence of an acute arthritic degeneration, exactly similar to that so often met with in tabes dorsalis, is of interest. The axillary abscess was probably of infective origin and in no way connected with the painless collections of pus occurring on the fingers as described by Morvan.

A CASE OF MYXŒDEMA SUCCESSFULLY TREATED BY MASSAGE AND HYPODERMATIC INJECTIONS OF THE THYROID GLAND OF A SHEEP.

The patient first saw DR. WALLACE BEATTY, of Dublin, in October, 1891. She had then suffered from progressive myxœdema for six or seven years, and

presented all the classical features of the disease. After six weeks' treatment by massage there was an undoubted improvement in the patient's condition. Still the improvement was not sufficient to hold out a hope that a prolonged course of massage would effect even a partial cure. Accordingly it was decided after consultation to try hypodermatic injections of sheep's thyroid. The extract was made according to the directions given by Dr. Murray (*Brit. Med. Journ.*, October, 1891): "The lobes of the thyroid gland of a sheep were removed immediately after it was killed, the instruments used having been rendered aseptic. The surrounding fat and connective tissue were removed from the lobes. Each lobe was cut up into small pieces on a glass dish, the glass dish having been previously washed with a one in twenty solution of carbolic acid. The pieces were put into two sterilized test-tubes, one for each gland, and over them was poured, in sufficient quantity to cover them, a solution containing a one-half per cent. solution of carbolic acid and glycerine in equal parts. The test-tubes were left in a cool place for twenty-four hours. The contents were then strained through fine muslin into a glass-stoppered bottle, and the muslin squeezed so as to express as much liquid as possible; the muslin was previously placed for a few minutes in boiling distilled water, and the bottle was also previously disinfected.

"The extract so prepared from the two lobes of one thyroid gland was given in three parts, with two days' interval between. The patient experienced no unpleasant sensations."

Up to February, 1892, the extracts of five thyroids had been injected; each extract being given in three separate injections within a week of its preparation.

The effect of the injections is described as marvellous.

"The improvement has steadily progressed. Now she is practically cured; the face looks natural, the skin of the face is now no longer thickened, but is thin and wrinkled; the eyelids are not swollen; the lips are natural; the tongue is of natural size; speech is rapid and easy; the hands are no longer clumsy, she can give a hearty and firm "shake-hands;" her rings are loose and easily removable; her movements are active; her hair, which had become thin, is now growing thickly; her memory has returned; menstruation is natural. No physician, seeing her now for the first time, could recognize the case as one of myxædema."—*Brit. Med Journ.*, 1892, No. 1628.

NOTE TOWARD THE LOCALIZATION OF THE KNEE-JERK.

C. S. SHERRINGTON, M.A., M.B. (*British Medical Journal*, 1892, No. 1628) states:

"Of whatever nature the knee-jerk ultimately may prove to be, whether it be reflex or whether it be direct, the phenomenon is admittedly in intimate dependence on the integrity of a reflex arc. The muscle concerned is well known to be the quadriceps extensor of the thigh; the motor nerve concerned to be the anterior crural.

"I found that not the whole of the quadriceps extensor of the thigh or of the anterior crural nerve is necessary for the "jerk"—it depends upon the vastus internus muscle, and perhaps the subcrureus as well; and on the branches of the anterior crural nerve to those muscles.

"If the branch given by the anterior crural nerve to the vastus internus and subcrureus be cut through, the knee-jerk disappears at once, although the nerves to the rectus femoris, the crureus, and the vastus externus, all remain intact. If, on the other hand, all the branches given by the anterior crural nerve to the rectus femoris, crureus, and vastus externus are divided, the knee-jerk remains brisk so long as the branch to the vastus internus be left intact.

"In the cat I found that contemporaneous section of the spinal nerve-roots of the lumbo-sacral region, if the sixth be spared only, makes the knee-jerk brisk, but that section of the sixth root alone, all other roots being intact, abolishes the jerk. In the monkey the same fact holds, but the root on which the jerk depends, instead of being the sixth lumbar, is the fifth lumbar. The sixth lumbar of the cat corresponds in its anatomy and physiology with the fifth lumbar of the rhesus monkey; the fifth lumbar of the rhesus corresponds in like manner with fourth lumbar of man.

"The cutting across of the posterior root of the fifth lumbar nerve of the rhesus abolishes the knee-jerk at once.

"That the knee-jerk should be related to only one nerve-root is singular when one remembers that the limb muscles are for the most part supplied by more than one spinal nerve.

"Longitudinal section of the cord along the median line throughout the lumbo-sacral region did not obviously affect the knee-jerk of either side, right or left."

THE TREATMENT OF TUBERCULOSIS WITH TUBERCULOCIDIN.

KLEBS (Hamburg and Leipzig: Leopold Voss, 1892) has issued a preliminary announcement of the results obtained by the treatment of tuberculosis by means of tuberculocidin, a derivative of tuberculin. The various modes of obtaining the preparation have in common the object of precipitating, by means of platinum chloride and the so-called alkaloid reagents, the deleterious constituents of crude tuberculin, and leaving in solution the curative principle, an albumose, precipitable by alcohol. Tuberculocidin, or alexin, is not merely attenuated tuberculin. Although the former represents by weight one-fortieth of the latter, an injection of two and a half milligrammes of tuberculin in a tuberculous subject is followed by decided febrile reaction, while an injection of tuberculocidin occasions no elevation of temperature. On the contrary, the judicious employment of tuberculocidin may be followed by a disappearance of hectic fever. Tuberculocidin is also wanting in the depressant effect upon the circulation that follows the employment of crude tuberculin. It is thought that tuberculocidin acts by causing degeneration of tubercle bacilli. Large doses may be followed by elevation of temperature as the result of an action comparable to that of tuberculin, from the setting free of the products of disorganization of the bacilli. In susceptible animals, especially guinea-pigs, injections of tuberculocidin in anticipation of tuberculous inoculation, retards the development of the tuberculous process. Anatomically, it can be demonstrated that treatment with tuberculocidin is followed by involution and dissolution of tuberculous tissue, taking place especially in the form of an exudation in the diseased structure. Necrosis,

however, does not occur, and there is no risk of establishing a military tuberculosis. The results are the better and the more rapid the earlier after infection that treatment is begun. In man two milligrammes may be tentatively given as the first injection. If this be followed by no considerable elevation of temperature, the dose may be rapidly increased to a decigramme or a decigramme and a half. Heetic fever is not a counter-indication. The injections may be given daily for about a month and be intermitted for a month, to be resumed or not according to the conditions that exist.

About a hundred cases of tuberculosis in human beings have been treated with tuberculoëidin, but sufficient time has elapsed to permit of an analysis of but seventy-five. Of these, fourteen were cured; forty-five were improved; fourteen remained unimproved; and two died. Most were cases of severe, or at least unequivocal pulmonary tuberculosis. In two cases, symptoms of apparently indubitable cerebral tuberculosis disappeared during treatment. In another case referred to, attended with hæmoptysis, and in others with hectic fever, the symptoms were ameliorated and the general condition was improved. In some instances the conjoined employment of other measures, such as super-alimentation, aërotherapy, the rest-cure, the administration of drugs, like benzosol, may be indicated to improve the nutrition. Unpleasant results were not observed in cases of laryngeal tuberculosis. The treatment is not incompatible with surgical interference.

ATAXIC PARAMYOTONIA.

GOWERS (*Centralbl. f. Nervenheilk. u. Psychiatric*, February, 1892, p. 41) has reported the case of a man forty-one years old, with a history of syphilis of eleven years' standing, in whom for a year and a half an abnormal tonic condition of the muscles, first in the lower, then in the upper extremities, had existed. The patient was well nourished; the extremities were large and the muscles well developed and hard. This hardness was dependent upon tonic spasm that interfered with voluntary movement, rendering it slow and difficult. There was no special rigidity; extensors and flexors were apparently involved in like degree. The spasm was not diminished by repetition of movement, but was constant and opposed passive as well as active movement. There was at the same time some muscular weakness. In the upper extremities coördination was impaired. The muscle-sense was defective, especially as to posture, size, and weight. The electric irritability of the muscles was preserved. It was not possible to elicit the knee-jerk or other evidence of myotatic irritability, although the failure may have been dependent upon spasm. Tactile sensibility was lost upon the palms of the hands, diminished on the dorsal aspect of the terminal phalanges, and on the soles of the feet. There was often a sensation as of standing upon a circular base. The sense of pain was retarded upon the palms of the hands. The temperature-sense was almost normal. There was almost complete impotence. The actions of the sphincters were preserved. There was an absence of pain and of cerebral derangement. Gowers considers the affection as analogous to Thomsen's disease and dependent upon functional derangement of the gray matter of the cord, as a result of which there is increased activity of the motor nerve-cells that control normal muscular tone.

ANEURISM OF THE BASILAR ARTERY.

KLIPPEL and BOETEAU (*Bulletin de la Soc. Anatom. de Paris*, February, 1892, p. 81) have reported the case of a man thirty-five years old, without a history of syphilis, of alcoholism, or of rheumatism, whose mother presented for forty years evidences of mental alienation, and died at seventy-four of cerebral softening. In apparently perfect health, he was suddenly seized; without recognizable cause, with intense pain at the nape of the neck, radiating thence to the vertex; pain was likewise felt at the supra-orbital notch. Pain was almost continuous and was intensified in paroxysms, especially by cough. The patient had a sense of boiling in the head; he heard a continual roar; at times he felt as if the head would burst. The pain was generally mitigated by recumbency in the left lateral decubitus and by strong pressure made with the hands upon a compress placed upon the vertex. Motility soon became affected. There was a sense of heaviness, of torpor, of vague stiffness in the extremity; so that locomotion became painful, laborious, and difficult. Muscular spasm was added. In the upper extremities there was apparent impairment of coördination, but delicate movements could be performed, though, perhaps, with some difficulty. The handwriting was tremulous; but syllables were not omitted or duplicated; expression was intelligent. Prehension became difficult from contractures involving the hands. The manifestations lacked symmetry. Though not hemiplegic, they were more decided upon the right than upon the left. The muscular sense and motor power remained undisturbed. Articulation became difficult, speech was slow and monotonous, but neither stuttering nor scanning; ideas were clearly expressed. Vision in the left eye became impaired and finally lost. The pupil of the same eye was contracted. In the progress of the case motility and sensibility of the left side of the face were lost. Dysphagia appeared; there was a sense of the presence of a foreign body in the œsophagus. There were anæsthesia of the pharynx and paralysis of the velum palati. Late in the case epileptiform crises occurred. The onset of the attacks was preceded by vertigo; there was neither pallor, nor cry, nor loss of consciousness; the movements were most decided on or exclusively involved the right side of the body; the face usually escaped; at the same time there was forced movement to the right. The attacks lasted on an average for five minutes longer than those of true epilepsy. They recurred daily with great regularity, toward night, but never during sleep. Despite the frequency of the seizures they did not affect the psychic or physical condition. Finally, the patient became taciturn and apathetic. Somnolence developed. Respiration and circulation presented no abnormality. The appetite was preserved; digestion was well performed; constipation existed. There was a disposition to retention of urine. A few days after coming under observation, while taking a few steps, the man uttered a cry, became pale, lost consciousness, and fell backward, and soon died. At the autopsy a large extravasation of blood was found in the posterior fossa of the skull. Seated upon the left aspect of the basilar artery was a ruptured sacculated aneurism as large as a walnut compressing the left half of the bulb and the adjacent cerebellum and cerebral peduncle. The remainder of the vascular system, the heart, kidneys, and other organs were healthy.

NORMAL TEMPERATURE OF THE AGED.

KELYNACK (Manchester) publishes in the *Medical Chronicle* (vol. xv., 1892, No. 5) the results of observations on the temperature of healthy old persons (eighty-two, eighty-three, and eighty-nine years of age), which tend to show (1) that the normal senile temperature, as registered both in the rectum and axilla, is very distinctly below that of healthy children and adults. (2) That the rectal or internal temperature in old age is almost always higher than the axillary, but varying from 0.2° to 1° F.

EXALGINE POISONING.

A. LOCKHART GILLESPIE (Edinburgh) communicates notes of a severe case of exalgine poisoning (*Medical Press*, 1892, No. 2758). The patient, aged twenty-three years, took four doses of exalgine (methyl-acetanilide) in the course of a day (about thirty-six grains in all) for the relief of toothache.

When seen about midnight he was lying insensible, with rigid neck and retracted head, widely dilated, sluggish pupils, quiet, deep breathing, and a pulse of 79, of good tension. Soon after he became more sensible and complained of hammering inside the head. Speech was indistinct and he could not move the trunk or limbs voluntarily. Every few minutes there was a convulsion, beginning with "risus sardonius" and groaning, followed in order by violent rolling of head and neck, spasm of cervical muscles, rigidity of both arms, and spasmodic contractions of abdominal muscles, the legs being barely affected. Tapping the head caused pain and brought on a convulsion, as did pricking the arm.

During the paroxysms the pain over the vertex was almost unbearable. At 1 A.M. $\frac{1}{2}$ gr. of morphine was injected, cold cloths applied to the head, and an hour later two purgative pills were taken. A little later he became more paralyzed and the convulsions more frequent. Of superficial and deep reflexes the cremasteric alone could be elicited.

The patient still complained of intense headache, inability to see, and total anæsthesia. As the pupils contracted the fits became less frequent. At 4.15 A.M. he was quieter; breathing central, almost Cheyne-Stokes. Pupils contracted, anæsthesia still universal. Urine presented no special features. He had a few spasms of muscles during the earlier part of the day; toward evening the anæsthesia was passing off. The excitement consequent on the visit of some friends determined a slight return of convulsions and anæsthesia during the night. The removal of the offending tooth on the following morning gave rise to a few slight convulsions, after which recovery was rapid. Temperature remained down throughout.

DIABETES MELLITUS OF SYPHILITIC ORIGIN.

FEINBERG (*Berliner klin. Wochenschr.*, 1892, Nos. 6 and 7) has reported four cases of diabetes mellitus in which there was evidence of the previous existence of syphilis, and in which improvement followed anti-syphilitic treatment.

The first case occurred in a man twenty-seven years old, who, in addition to

the symptoms of diabetes, presented narrowing of the right pupil, neuro-pathic dilatation of the bloodvessels, evidence of irritation of the vagus (as manifested by slowing of the heart), enlargement of the liver and spleen, ascites, anasarca, pains in the back, hypochondria, and extremities, with consecutive anæsthesia of the upper extremities and of the back from the seventh cervical to the twelfth dorsal vertebra, and paralyses of the bladder. The knee-jerks were absent. Evidence of a cerebral lesion was wanting. Improvement followed anti-syphilitic treatment, but the patience of the man gave out and he disappeared from observation. It is thought that there existed a syphilitic spinal meningitis, as a result of which the sensory roots of the spinal nerves and the rami communicantes of the last cervical and first dorsal ganglia of the sympathetic suffered compression. It has been shown that section of the last cervical or first dorsal ganglia of the sympathetic or of the last cervical or first dorsal nerve may give rise to diabetes.

The patient in the second case was a man, twenty-eight years old, who presented successively syphilis, gastro-intestinal catarrh, thirst, polyuria, glycosuria, focal epileptiform seizures, followed by transient hemiparesis. The symptoms were entirely dissipated by anti-syphilitic treatment. In this case it is considered probable that syphilitic endarteritis developed in the region of the diabetic centre on the flow of the fourth ventricle, with perhaps the subsequent formation of a gumma in the motor cortex.

The third case occurred in a woman twenty-eight years old, who, following syphilitic infection and emotional shock, became hysterical, and developed headache, with nocturnal exacerbations, often accompanied by nausea and vomiting. Then symptoms of bulbar palsy appeared, with paralysis of the levator palpebræ, and finally diabetes manifested. Striking improvement in all of the symptoms followed anti-syphilitic treatment. The most plausible explanation of the symptoms and the course they pursued lies in syphilitic narrowing of the vessels supplying the floor of the fourth ventricle.

In the fourth case the patient was a woman, thirty-one years old, of whose thirteen brothers and sisters but one was living. When nineteen years old she suffered from ulceration of various parts of the body, continuing for a period of four years. She had borne five children, two of whom survived. For five years there had been constant headache, worse at night, preventing sleep and intensified in paroxysms. For four years there had been excessive thirst, the patient drinking eight or ten pints of water during the night alone. Vision began to fail. Weakness of the left half of the body, of arm, leg, and face, developed. Left lateral hemianopsia appeared. Sensibility was preserved. The right pupil was dilated; it reacted feebly to light. The cutaneous reflexes were normal. The patellar reflex was exaggerated on the left side. The sphincters were uninvolved. The urine contained one-half per cent. of sugar. Mercurial inunction was followed by salivation. Potassium iodide was not well borne. The left pupil became dilated; its response to light was lost. The hemianopsia extended to the right half of the visual fields. The patient became dissatisfied and withdrew from treatment. The conclusion was arrived at, that the symptoms were dependent upon a gumma at the base of the brain in the region of the optic chiasm, associated with syphilitic endarteritis of branches of the Sylvian artery.

THE CHANGES IN THE BLOOD IN DISEASE.

SADLER (*Fortschritte der Medicin*, Bd. x., 1892) reports the results of a large number of observations made at the clinic of v. Jakse, at Prague, upon the blood in various pathologic conditions. It appears that the number of red corpuscles is diminished, though, as a rule, not considerably, in the course of acute disease. In chronic disease, especially when cachexia develops, the diminution may be decided. Under the same conditions, the hæmoglobin suffers a diminution relatively greater than that of the corpuscles. To these generalizations, tuberculosis, especially if the patient be well nourished, and valvular disease of the heart, especially mitral disease, may constitute exceptions. In some cases of chlorosis, the number of red cells may for a long time be almost normal, while the proportion of hæmoglobin is considerably diminished. On the contrary, in cases of anæmia there is decided diminution both in the number of red corpuscles and in the proportion of hæmoglobin. The greatest diminution in the number of red corpuscles occurs in pernicious anæmia, though almost as profound a change may be observed in the case of anæmia following hemorrhage or resulting from other causes, such as atrophy of the glands of the stomach. In cases of pernicious anæmia, Sadler failed to find the hæmoglobin in relatively greater proportion than the number of red corpuscles. In cases in which as a result of acute, profuse diarrhœa, the consistency of the blood was augmented, the number of corpuscles and the percentage of hæmoglobin were increased. A similar condition appeared in some cases of enteric fever. In untreated cases of malarial fever, the number of white corpuscles is increased. Physiologically, leukocytosis is present during digestion. Leukocytosis is also present in the puerperal state, at least for twelve days following labor. The white corpuscles are usually in excess in acute diseases attended with exudation, viz., pneumonia, pleurisy, peritonitis, pericarditis, meningitis, polyarthritis. It seems likely that there is a relation between the character of the exudation and the presence or absence of leukocytosis. If leukocytosis appear in the course of enteric fever it must be considered as evidence of the existence of a complication. Leukocytosis occurred in pulmonary tuberculosis only after injections of tuberculin. Leukocytosis was present in a minority of cases of carcinoma. Four cases of sarcoma presented leukocytosis. There was little or no excess of leukocytosis in three cases of lymphadenitis.

CACTUS GRANDIFLORUS IN CARDIAC DISEASES.

R. W. WILCOX (*The Post-Graduate*, New York, vol. vii., No. 3, 1892) has made a clinical study of cactus grandiflorus in morbid conditions of the heart. He uses a fluid extract made by a particular firm, giving doses of from 10 to 30 minims. From the careful study of twenty-three cases, the author concludes that the drug has no cumulative action, that it is somewhat slow in its results, about six to twenty-four hours being required before its full physiological action is obtained, except in cases of tachycardia, when two hours are sufficient. It does not interfere with digestion, and its effects upon the urinary and respiratory system are the results of its action upon the heart.

The conditions in which it is especially useful are: First, cardiac weak-

ness, when the heart has not acquired compensation for valvular lesion, or when compensation has been destroyed by muscular degeneration. Secondly, functional cardiac diseases, including, among others, disturbances arising from tea, coffee, tobacco, and alcohol, and the irritable hearts, of which palpitation is of emotional origin. Thirdly, slow hearts, when there is over-stimulation of the pneumogastric, or marked degeneration of the muscular wall of the ventricle—hearts in which digitalis is absolutely counter-indicated.

In all cases the tension of the pulse is increased, but its breadth is unaltered, so that the work of the heart is not made greater by contraction of the arterioles, the increase of tension being due to the fact that more blood is propelled through the arteries; thus prompt relief is afforded to venous congestion.

In old rheumatic hearts pain is relieved because the incompetency is relieved, and this is a guide for the administration of the drug in valvular lesions.

In aortic regurgitation it is the drug *par excellence*, having all of the benefits and none of the dangers of digitalis in that condition. In mitral stenosis it is absolutely contra-indicated, as, owing to the shortening of the diastole, sufficient blood cannot flow into the ventricle to permit of an efficient systole.

The author believes that with the intelligent use of cactus in suitable cases, we shall have greater success than with any other drug in use for diseases of the circulatory system.

SURGERY.

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SURGICAL ANATOMY OF THE PELVIS OF THE KIDNEY, AND ITS EXPLORATION.

LEGUEU (*Ann. des Mal. des Organ. Génito-urin.*, 1891, vol. ix., Nos. 6 and 7) directs attention to the normal anatomy of the pelvis of the human kidney. In the last few years incisions into the kidney or its pelvis for the removal of concretions have become more frequent. It is conspicuous, during these operations, that the pelvis of the kidney, in most cases, does not correspond with the descriptions of anatomists, and that the funnel-shaped pelvis is

often wanting. The author has found in his investigations that the ampulliform pelvis exists in only a limited number of cases. Usually the pelvis of the kidney is branched—that is, the ureter divides, without previously bellying, into the tubes that connect with the calyces of the kidney. Transition forms are often seen between the ampullar and ramified forms. The author, in common with other writers, states that the posterior part of the pelvis is always devoid of vessels.

The internal exploration of the kidney is next discussed. Two methods are open to the operator—either an incision into the pelvis, or an incision into the kidney substance itself. If the kidney is not enlarged, exploration of the pelvis with the finger is scarcely possible, because under normal conditions it is much too small. Different authors, therefore, use for examinations sounds which are introduced through small incisions in the pelvis. It is clear that the sound can in no way replace the palpating finger, especially in the parenchyma of the kidney, as encapsulated stones could scarcely be detected in this manner.

For the investigation by cutting into the kidney substance, Morris recommends an incision on the posterior surface of the organ. This is not to be advised, however, as one is never secure against free hemorrhage, and by this cut a great number of secreting elements are divided and destroyed; besides, a satisfactory examination is impossible. The incision usually preferred is that on the convex border of the kidney. In this operation severe hemorrhage and destruction of secreting elements are avoided. The condition of the kidney can be made out as far as its middle portion is concerned, but above and below the examination is unsatisfactory, inasmuch as the cut cannot exceed a certain limit. The author, therefore, suggests two incisions, one on the upper part of the convex border, and the other on the lower part of it. It is then possible to determine satisfactorily the condition of the corresponding part of the kidney through these cuts, while if a finger be introduced into each incision at the same time the middle portion of the organ can be carefully palpated.

[In *The Dublin Journal of Medical Science*, for February, 1892, Dr. T. MYLES protests against the "loose and unscientific way in which anatomical names are used" in articles like surgery of the kidney. He adds, as an example of what he criticises, that one writer says: "I cut into the pelvis of the kidney from the front," and continues, "Now he could not do this, because the kidney has no pelvis, and if his statement means that he cut into the pelvis of the ureter from the front," it would indicate the recklessness of anatomical ignorance, as the renal veins and arteries completely conceal nine-tenths of the pelvis."

The expression "pelvis of the kidney," as used by surgical writers, although possibly open to anatomical criticism, indicates accurately the general space within the sinus into which the calyces open. Gray speaks of the pelvis "merging into the ureter proper." Jordan Lloyd says: "When the kidney is exposed through a lumbar wound, I puncture its lower end with a long-bladed tenotome, in a direction upward and inward, making for the current of the calyces. . . . Into this opening I pass a child's bladder-sound, and systematically explore the whole interior of the pelvis." Treves says: "The stone may be lost in the rush of fluid which escapes when the pelvis

of a much distended kidney is opened." Morris says that a calculus may grow "in one of the calyces or in the pelvis of the kidney," and frequently speaks of the "renal pelvis." Jacobson, Thornton, and others speak of incisions into or through the "pelvis of the kidney."

It seems unnecessary, therefore, to reject the term which applies to a strictly defined anatomical and surgical region, even though we may, with Dr. Myles, question the possibility of safely opening it "from the front."—J. W. W.]

INTERMITTENT HYDRONEPHROSIS.

TERRIER and BAUDOUIN, in a study of this subject (*Revue de Chirurgie*, 1891, No. 12), arrive at the following conclusions: The intermittent variety of hydronephrosis has been little known until recent years, and appears to be more frequent than is generally thought.

This clinical variety has its origin in several different lesions. In the great majority of cases it constitutes a complication of displacements of the kidney. It is more frequently observed in females than in males, and is more common on the right side in women, while the left kidney seems oftener affected in men.

Occasionally the origin of the trouble is a calculus in the pelvis of the kidney, at other times a compression or temporary obliteration of the lower extremity of the ureter, while, in other cases, it is of congenital origin. It is also produced in the movable kidney by bending of the ureter, with or without torsion, at the time of the displacement. There is momentary arrest of the secreted fluid, with the formation of a hydronephrotic pocket, which empties itself as soon as the kidney resumes its normal position. Other causes are peripelitic irritation, due to circulatory disturbance or to infection of the mucous membrane of the pelvis, and fibrous adhesions, whereby the sac is united to the upper part of the ureter, transforming an intermittent into a permanent hydronephrosis.

The alternations of filling up and evacuation of the pelvis of the kidney, due to the temporary obliteration of the ureter, can be explained clinically by the characteristic painful attacks, coming on in the course of a more or less altered state of the health, occurring at intervals of about a month, or sometimes oftener. These attacks, which present three stages—the beginning, the acme, and the terminal phase—are characterized by intense pains, sometimes intolerable, coincident with the appearance of a fluid tumor, rarely fluctuating, situated in most cases in the right flank, with a notable diminution in the quantity of urine voided.

These are the consequences of an abrupt flexion of the ureter, following the displacement of the kidney. Each crisis lasts several hours, and suddenly ceases when the kidney resumes again its normal position. The tumor disappears with the pains, and there is a considerable discharge of urine—the pelvis has emptied itself. Hydronephrosis, beginning in this way, may remain intermittent for a long time, may remain stationary, or may become aggravated during pregnancy. After a time, the collection becomes infected, the urine is purulent, and the dangers incident to this condition present themselves.

For the painful crises medical measures may be tried. If there is renal mobility nephrorrhaphy is advised. When there is permanent hydronephrosis which tends to progress, more radical measures are demanded. Tapping is to be rejected. If the lesions are double, it is recommended to make on the side most affected a fistula of the pelvis, but if the other kidney is healthy, it would be better to do at once a nephrectomy, as, if the surgeon is content with draining the cavity, a secondary nephrectomy will probably be necessary.

EXCISION OF STRICTURE OF THE DEEP URETHRA AND URETHROPLASTY FOR RADICAL CURE.

KEYES reports (*Journal of Cutaneous and Genito-urinary Diseases*, vol. ix., No. 11) a case successfully treated by this method. He divides strictures of the deep urethra into the soft, the cicatricial, and the inodular. The first of these, he claims, often yields permanently to dilatation, and the cicatricial to thorough division on the floor and roof of the canal, while the inodular is incurable radically without excision, with or without transplantation of foreign tissue.

The case reported is that of a man, aged sixty years, first seen by the author July 24, 1890. Twenty-eight years previously the patient had fallen across a beam, rupturing his urethra, with the usual symptoms—retention, abscess, infiltration, perineal fistula, etc. There had been no previous gonorrhœa. Perineal section was done at the time of the accident, but close recontraction followed.

When seen by the writer, a fine filiform instrument was with difficulty passed into the bladder, which the urethra clasped tightly. Urine was being constantly passed with great straining, largely through the perineal fistulæ. The stricture was laid open on the filiform guide. The contracted portion began in front of the bulb, and extended back under the pubic symphysis. The stricture was a dense fibrous cord with a minute central calibre, as large as a crow-quill and one and a half inches long. After division, the stricture immediately sprang together, owing to its density and elasticity. It was evident that it would be impossible to keep this passage open, and Monsel's suggestion of excision and transplantation of the inner layer of the prepuce was adopted. The patient had an abundant foreskin, which was disinfected and wrapped in hot bichloride compresses. The stricture was carefully dissected out, and by means of hot applications and pressure the bleeding was arrested. A piece of the inner layer of the foreskin, one and one-half by two inches, was rapidly removed and cleansed, placed for a moment in warm boracic acid solution, and sutured in place in the roof of the gap left by the removal of the stricture. Four catgut sutures were used to attach it to the healthy urethra anteriorly, and several lateral sutures were also applied; no sutures were placed posteriorly, as it was impossible to reach the prostatic urethral end.

A large drainage-tube was passed into the bladder from the perineal wound, and a soft rubber catheter passed through the entire length of the urethra. The parts were dusted with iodoform, the catheter and tube made to press the transplanted mucous membrane in place, gauze packing applied, and retained by a T-bandage.

On the fifth day the dressings were removed, and the flap was found to be alive and adherent everywhere, except along the anterior edge and one anterior angle. The parts were repacked, and all dressings, including the vesical tube, were removed on the eighth day. The perineal wound healed promptly, and in the middle of the third week the patient went home, a distance of one hundred and sixty miles, with instructions to pass a 32 Fr. steel sound once a week. The patient, however, used a 21 Fr. sound, as he thought this large enough. Three months later he was seen, and reported himself perfectly well. At this time a 27 Fr. blunt sound disclosed a moderate linear obstruction at each end of the transplanted flap. The patient could hold his water half a day and all night, which he had not done for years before, and he had gained twenty pounds. He was seen again in September, 1891, and has remained perfectly well; urinates in a full stream, urine clear and free from shreds or pus. He had continued to pass a 21 Fr. sound once a month.

STRICTURE OF THE ŒSOPHAGUS.

NEWMAN (*Lancet*, London, vol. i., 1892, No. 5) writes at length on strictures of the œsophagus.

The diagnosis of organic stricture can usually be made without difficulty. The history of injury followed immediately by painful deglutition, which passes off in a few days or weeks, and which is followed at some remote period by a constantly increasing dysphagia, without pain, hemorrhage, or lymphatic enlargements, would point to organic stricture. In many cases, however, a clear history cannot be obtained, the patient not having knowledge of, or having forgotten, a previous injury. The mischief may even have happened while the patient was under the influence of alcohol, or during a fit of insanity.

On the other hand, a carcinoma may develop in a case in which there is a clear history of traumatism, but, as a rule, it is more apt to be protracted irritation which is responsible for malignant growths. Especial stress should be put upon the absence of pain, hemorrhage, and enlarged lymphatic glands in non-malignant cases. As carcinoma may exist, however, without these symptoms, the history of the case must be carefully reviewed, the age of the patient considered, and the character of the dysphagia and of the discharges noted.

Tertiary syphilis may manifest itself in a dysphagia, due either to the formation of a gumma, or to the contraction of an old lesion.

The author questions the existence of spasm of the fibres of the muscular coat in an otherwise healthy œsophagus, but has found this condition in cases in which there was a local irritation. This may or may not be associated with some other general or local condition which, if present, will also demand attention.

The prognosis in carcinoma of the œsophagus depends upon the seat of the growth—whether it is in a position in which surgical intervention is possible. If operation is not done, death will sooner or later inevitably occur, usually from starvation. If the new-growth begins in the upper part of the gullet, the disease is apt to be rapidly fatal. On the other hand, carcinomatous growths of the lower end of the œsophagus may run a very slow course. The hard will be very much more chronic than the soft variety of cancer.

Dr. Newman has collected the statistics of 556 cases of carcinoma of the œsophagus in which the mode of death was given, with the following result: Collapse and exhaustion, 390; inflammation of the lung, including gangrene, 91; pleurisy, 53; peritonitis, 17; perforation into heart, or bloodvessels, 15.

In benign tumors of the œsophagus the prognosis will depend upon their location, size, and rapidity of growth, and whether or not their removal is possible by operation. If situated high up, they may be cut off or ligated; or, if pedunculated and soft, the parasol-probang may dislodge them. In those cases in which operation is impossible, the seat of the growth and the probability of its interference with other functions must be considered in giving a prognosis.

Organic strictures, if seen early, may yield to dilatation with bougies. If a bougie can be passed, the prospect of recovery is good; but, if the constriction will not admit one of these instruments, gastrostomy becomes imperative.

A CONTRIBUTION TO THE SURGERY OF THE ŒSOPHAGUS.

GERSTER, in a study of the surgery of the œsophagus (*New York Medical Journal*, vol. lv., No. 6), presents the following conclusions: If a foreign body becomes lodged in the œsophagus, and cannot be displaced downward into the stomach or extracted without the employment of much force, it is imperative to perform external œsophagotomy at once. This operation, as now practised, is comparatively safe; its mortality for all classes of cases is given by Fischer as 20 per cent. The operation may be difficult if the case is complicated by a goitre or other cervical tumor. The conditions are parallel to those of strangulated hernia—an early operation is safe, a late one dangerous and often useless. Delay extending over twenty-four hours is never justified, and, if at the end of this period extraction by bloodless processes is not easy, the gullet should be incised at once.

If impaction has existed for more than twenty-four hours, frequent and persistent efforts at dislodgment are apt to be more dangerous than œsophagotomy, inasmuch as the patient's condition is apt to be bad from fever and starvation, while the manipulations in the fauces and œsophagus provoke nausea and vomiting which are depressing, and the risk of causing traumatic perforation is considerable.

In performing œsophagotomy, the incision should be made large enough to permit of comfortable manipulation without much traction. Blunt dissection is to be avoided, as the tissues are less viable and succumb to septic influences more easily when torn than when cut. The line of the incision is just in front of and parallel with the anterior border of the sterno-mastoid muscle, beginning a little below the cricoid cartilage and extending to the sternal insertion of the muscle. The omohyoid is drawn aside and the lateral margin of the thyroid gland is exposed to act as a guide. The great vessels with their sheath are to be drawn backward with the sterno-mastoid muscle. Dissection should proceed between two mouse-toothed forceps so that vessels in the line of the incision can be recognized and secured before being cut. If the sternal portion of the sterno-mastoid muscle is in the way, it may be cut. Care must be taken not to injure the recurrent nerves. The œsophagus may be recognized by its longitudinal fibres. If there is doubt, a urethral

sound may be introduced through the mouth and the incision made on the point of this instrument. Fillets of silk passed through the edges of the cut facilitate manipulations within the gullet.

In the absence of septic complications which would usually be the case if early operation was performed, the edges of the œsophageal wound should be stitched with fine silk. The outer wound is to be packed loosely with iodoform gauze. A few silkworm-gut stitches may be introduced into the cutaneous edges of the wound, which are not to be brought together, however, until after the removal of the packing.

Alimentation by the mouth is permitted at once, liquid substances only being given, and in small quantities, which are to be swallowed while the patient is on his right side. Minute leakage frequently occurs, but this does not interfere with the prompt healing of the wound.

In those cases in which ulceration or sloughing has occurred, suture is not usually practicable, and is rarely safe. The wound should be packed and allowed to heal by granulation. The stomach-tube will probably be necessary in these cases, and may be inserted either through the wound, mouth, or nares.

Two cases are detailed in which the operation was performed; both recovered.

OBSTETRICS.

UNDER THE CHARGE OF

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THE PROPHYLAXIS OF PUERPERAL DISEASE.

The question as to how far obstetric patients can be safely utilized in the study of obstetrics is still under debate, two opinions prevailing: one, that the use of such material is only safe when antiseptic injections as well as external antiseptics are employed; the other, that all injections and internal examinations are unnecessary and injurious. FROMMEL, of Erlangen, in an obstetric service of between five and six hundred patients, followed a line of treatment which embraced vaginal injections with bichloride solution, 1 to 2000. His clinic was open to about one hundred students, and in connection with the hospital there is a school for the training of midwives. He computes that in abnormal cases, where a thorough study of the case was necessary, from sixty to seventy examinations during the patient's stay in the hospital were found requisite. So long as he continued to employ prophylactic injections, he had no case of sepsis whose origin could be ascribed to his clinic. His morbidity rate varied from five and a half to seven and a half per cent. He was led for purposes of comparison to abandon the prophy-

lactic injections, relying entirely upon external disinfection, when several cases of puerperal sepsis occurred, originating in the clinic, and his morbidity rate rose to eleven and one-tenth per cent. He believes, then, that proper instruction cannot be given without internal examinations, and that such can only be employed safely when prophylactic injections are used.—*Deutsche medicinische Wochenschrift*, 1892, No. 10.

THE RESULTS OF TWO HUNDRED LABORS WITHOUT INTERNAL DISINFECTION.

MERMANN has continued in the clinic at Mannheim his usage in conducting labors without internal disinfection, and records in the *Centralblatt für Gynäkologie*, 1892, No. 11, the results in 200 recent cases. He had but one death, and that from rupture of the uterus complicated by placenta prævia and a large amount of amniotic liquid. In the 200 cases there were 36 which presented complications of greater or less gravity. These cases complete a series of 700, presenting no death from septic infection. The morbidity rate was 6 per cent. In the last 200 cases there occurred but 2 cases of mild ophthalmia, and in all less than 10 cases of conjunctivitis were observed among infants. Mermann's practice is to omit injections, and, whenever possible, to also omit internal examinations, relying upon palpation and auscultation and a close observation of the case.

SUBACUTE ENDOMETRITIS IN THE LATTER MONTHS OF GESTATION.

LÖHLEIN reports in the *Centralblatt für Gynäkologie*, 1892, No. 11, the case of a woman, aged forty-six years, who had borne a number of children. She was admitted to the clinic suffering from endometritis following an abortion; was treated by euretting, and discharged as recovered. She returned near the end of her next pregnancy, complaining of a chill, followed by fever, prostration, and obstinate pain. The pain was worst upon the left side of the patient's abdomen, and radiated over her body. On examination the abdomen was found painful, the uterus sensitive to pressure, especially upon the right side. Clonic contractions of the uterine muscle were present; the membranes were tense, but dilatation was proceeding slowly. Her fever was remittent in character, and persistent, with diminution of sleep and appetite during an entire week. Labor pains finally ensued, and a living child was born. The placenta was retained, and when the hand was introduced it was found to be completely adherent in the right half of the uterus. There were no infarcts in the placenta, but old, thick, and brownish extravasations of its uterine surface. The delivery of the placenta was followed by cessation of pain and rapid recovery.

TWO HUNDRED CASES OF ECLAMPSIA.

At a recent meeting of the Berlin Medical Society, OLSHAUSEN gave the results of his study of two hundred cases of eclampsia which have been reported in a number of medical journals, among them the *Prager medicinische Wochenschrift*, 1892, No. 10. As is often observed in hospital practice, his cases came in series, the larger portion of them between September and Feb-

ruary. Most of them were primiparæ, and especially those older than the average. Twin pregnancy was also a frequent cause. The frequency of eclampsia, Olshausen estimates as greater than twenty-five per cent. of all cases. Thirty per cent. of premature labors, he thinks, are caused by eclampsia. In five cases out of two hundred, pregnancy was not interrupted by this complication. It is rare for eclampsia to persist after a brief period of the acute disorder.

As prodromal symptoms, were observed headache and, more important, gastric pain with frequent vomiting. Amaurosis was rarely observed. In three cases an aura was present.

Albumin was almost invariably present in the urine. Casts were often found, œdema rarely, and icterus was observed twice.

Twenty-five per cent. of the 200 perished, and post-mortem examinations were obtained in 37 cases. Acute affections of the kidneys were found in 22 of these; chronic interstitial nephritis in 4. The remainder showed a mixture of acute and chronic diseases; in 2 cases the kidneys were unchanged. In 6 cases a ureter was dilated, but not to a pathological extent. Nine patients died before the end of labor, and labor was terminated by Cæsarean section in one patient, and the life of the child was preserved. Most fatal cases terminated in four days after the first convulsions, although convulsions occurred as late as the thirtieth or fortieth day after labor. The complications causing death were sepsis and pneumonia, eclamptic patients being especially susceptible to septic poison.

Regarding prognosis, it is often favorable where convulsions begin soon after the birth of the child. Frequent convulsions, rise in temperature, small and frequent pulse, are signs of a fatal issue. Twenty-eight per cent. of the children born at term died. This result is sometimes owing to morphia-intoxication, where large doses of the drug have been given.

As regards the treatment of eclampsia, Olshausen depends upon morphia, chloral, and the use of the forceps. Version is contra-indicated, and chloroform should be used only where the convulsions recur regularly. The intoxication theory of eclampsia seems most probable, and an interesting analogy is shown between the lesions of eclampsia and those of sublimate-intoxication.

EXPERIMENTAL RESEARCHES IN A CASE OF PUERPERAL NEPHRITIS.

In the *Archives de Tocologie*, 1892, No. 2, CHARPENTIER describes the case of a patient taken with infectious nephritis after labor. Her temperature was high, she had frequent chills, and albumin in the urine. With a view to determine the cause of this infection, examinations were made of the blood and the urine, and culture experiments were employed which gave negative results. An effort was then instituted to test the toxicity of the patient's urine, and, following Bouchard's methods of experiment, rabbits were inoculated with the urine, which was injected into the marginal vein of the ear. The injections were followed by tetanic convulsions and speedy death, respiration stopping before the heart failed. Rigor mortis developed rapidly, the animal remaining in the posture assumed in the moment of death. On examining the kidneys, ecchymoses were present beneath the capsules. On

section, the organs were pale and anæmic; the urine of the animal taken at the moment of death was slightly albuminous. Microscopic examination of the kidneys of the animal showed nothing but acute congestion. Injections of the patient's urine under the skin of other animals resulted in the same manner, with the exception that death occurred after a longer interval.

Regarding the clinical history of Charpentier's case, the patient did well for eight days after labor, when chills and fever supervened; no lesion could be found of the genital tract, and involution of the uterus continued with regularity. The lochia were normal. Vigorous antiseptic treatment was at once employed, and it was not until the thirty-fourth day after labor that albuminuria occurred, accompanied by symptoms of uræmic intoxication.

TUBAL ABORTION; INTRA-PERITONEAL BLEEDING; LAPAROTOMY; RECOVERY.

JAHREISS reports in the *Müncheuer medicinische Wochenschrift*, 1892, No. 9, the case of a woman who had borne two children, who complained of profuse irregular bleeding persisting for two months, and occurring about every two weeks. Pain was also present, the patient stating that her menstruation had been profuse since the birth of her last child, when a midwife had delivered an adherent placenta. An examination revealed the uterus nearly normal; the right Fallopian tube showed dilatation. The left tube was normal. The patient was put at rest, given fluid extract of hydrastis, and an ice-bag placed upon the abdomen. This treatment failed to relieve the pain or check the hemorrhage, and finally a slight elevation of temperature with a rise of pulse to 120 was observed. The symptoms were those of rupture of a tubal sac, although collapse, subnormal temperature, and profound anæmia were absent. Upon opening the abdomen blood was found in the pelvis, and tubal abortion upon the right side was discovered. The patient recovered without complications. The right tube and ovary were removed, and the abdomen cleansed. On examining the tube clotted blood was found in it, but the ovum could not be distinguished. Rupture had occurred, although the orifice of the rupture was partly closed by the clot.

THE QUESTION OF CRANIOTOMY.

In the *Archiv für Gynäkologie*, Band xli. Heft 3, BÁRSONY contributes an interesting paper on "Craniotomy," based upon 46 cases occurring during the last sixteen years in the obstetric clinic at Budapesth. The mortality in these 46 cases was 8, or $17\frac{8}{10}$ per cent.; the causes of death were rupture of the uterus in 4, septic infection in 4; in only 1 case did the infection occur after admission to the clinic, which reduces the mortality for which the clinic was responsible to 1 out of 46 cases, or $2\frac{1}{16}$ per cent. The cases are reported in detail, and the arguments for and against craniotomy and the Cæsarean section are fully stated. The recent literature of the subject is clearly summarized, and Bársony concludes that the Cæsarean operation is not one which the average practitioner can perform with safety in the ordinary dwelling of the poorer classes. He accepts the most favorable statistics of the Cæsarean operation—namely, those of Leopold, of Dresden, who has

a mortality of 8 per cent. Bársony concludes that when the *conjugata vera* is not less than seven centimetres that spontaneous labor is not impossible; that when the *conjugata vera* is six centimetres the Cæsarean operation is safer than embryotomy; but that when the *conjugata vera* is more than six centimetres, but the spontaneous expulsion of the child fails, unless the patient be in a hospital where she can have the advantages of the best surroundings, craniotomy should be performed. The patient should afterward be kept under observation, and labor should be induced in ample time to secure the birth of a living child. As in Cæsarean section, so in craniotomy, previous ineffectual attempts at delivery with forceps seriously damage the mother's chances for recovery.

TUBAL ABORTION: A CRITICISM.

In the *Medical Press*, No. 2759, p. 285, LAWSON TAIT criticises the term "Tubal Abortion," and asserts that cases of supposed extrusion of the fœtus at the abdominal extremity of the tube are really cases in which the fimbriæ close over the ovum and become adherent to one another. The subsequent dissection of the fimbriæ would constitute a rupture as complete as if the tube had given way one-eighth of an inch within the ostium. Tait considers the introduction of the term "Tubal Abortion" unnecessary, as the cases must be very rare, and dangerous as tending to lessen the gravity of the condition in the mind of the general practitioner.

GYNECOLOGY.

UNDER THE CHARGE OF

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WHAT EFFECT DOES ELECTRO-THERAPY HAVE UPON FIBRO-MYOMATA?

In a paper with this title (*Deutsche med. Wochenschrift*, No. 2, 1892) MARTIN and MACKENRODT report thirty-six cases treated according to Apostoli's method, with the following results: In no instance did the growth disappear. A positive diminution in the size of the tumor could not be demonstrated. Most of the patients, after several months' treatment, were relieved as regarded hemorrhages, and in some instances pain, but were usually obliged to resume the treatment. In upward of 40 per cent. of the cases electricity had no effect on the growth, and the general condition of the patient became worse. Three patients died while under treatment, two of septic peritonitis (in one laparotomy was performed, with removal of the suppurating tumor), and one of profound anæmia following repeated hemorrhages.

Analyzing the most recent statistics of Keith and Schäffer, the writers find that of 212 cases, in 32 per cent. the symptoms were relieved; in 44 per cent.

they became worse, and nine patients (4.3 per cent.) died. In no instance did the tumor disappear. Moreover, the so-called "symptomatic cure" was only permanent when the patient was near the menopause at the time of the treatment; before this period the hemorrhage frequently occurs.

Granting that electricity is a palliative means of treating fibroids, it remains to inquire why the results are so variable. The explanation is to be found in the histological peculiarities of the tumors in different cases. Thus among 356 cases treated by Martin in his private hospital, in 53 the tumor was cystic or malignant; in 23 there was accompanying disease of the uterus (cancer or pregnancy); in 43 marked disease of the adnexa. Since most of these complications could not be recognized before the abdomen was opened, it was evident that there was some risk in the electrical treatment. As regards the extirpation of the myomatous uterus, the writers report 20 cases of laparo-hysterectomy with 2 deaths (neither from sepsis), and 14 cases of vaginal extirpation, with no deaths. Including 5 successful cases of enucleation, the entire mortality is 5 per cent., as compared with 4 per cent. with the electrical treatment. Considering the difficulty, loss of time, and discomfort to the patients attending the latter, and the fact that in more than a third of the cases they become worse, the writers have entirely abandoned it. Fibroid tumors which give rise to only slight symptoms receive no local treatment at all. If serious disturbances are present the patients are operated upon.

GONORRHOEAL INFECTION IN THE FEMALE.

BUMM (*Münchener med. Wochenschrift*, No. 50, 1891) reports further progress in the study of this subject, based upon observations in 132 cases. He concludes that gonorrhœa in the female genital tract runs the same course as in other mucous surfaces, *i. e.*, that it is a superficial inflammatory process. So long as the discharge contains gonococci it is immaterial whether the source of infection is an acute or chronic urethritis. Within twenty-four hours after they have been deposited in the vagina the cocci multiply and invade the interstices of the epithelial layer, producing an intense irritation of the papillary bodies, which is partly mechanical and partly chemical, the latter being due to their toxæmic products. In consequence of the resulting inflammation the epithelial layer is destroyed; but the microbes do not extend any deeper into the submucosa. The epithelia begin to be reproduced in from five to ten days, and after this process is complete the cocci are only found in the secretion on the surface, where they continue to grow for months afterward. The resistance offered by the new layer of epithelium is not a positive bar against fresh invasion of the deeper tissues, which may occur when from any cause (such as menstruation or sexual excess) swelling and round-cell infiltration of the mucosa occurs; the recurrence may simulate fresh infection, though the symptoms are less acute. Gonococci may live and be reproduced for months and *even for years* in the secretions of the female genital tract, and as long as they are present there is always a possibility of transmitting infection, as well as the danger of extension to healthy portions of the tract—the patient is not cured. Gonococci, unlike other specific microorganisms, have no relation to septic processes, and, though they give

rise to acute inflammation, they are unable to invade the connective tissue extensively and to cause suppuration in the same. The writer has never been able to cause suppuration by injecting pure cultures into the arm of the human subject. When gonococci are found in the pus in ovarian abscesses it may be that the abscesses arose from the primary infection of Graafian follicles rather than migration of the organisms through the wall of the adjacent tube, as suggested by Wertheim, reasoning from the behavior of other septic germs. In cases of apparent septic infection of the pelvic connective tissue following gonorrhœa pyogenic microbes are also found, showing that mixed infection is present. This is comparatively rare, even in puerperal cases, in which the conditions seem to be most favorable.

The different structure of the mucosa in different portions of the genital tract explains certain variations in the course of gonorrhœa. Those parts are most susceptible to infection in which the epithelium is delicate, because such epithelium (especially the columnar variety) offers less resistance to the invasion of the cocci. Hence the great susceptibility of children, and the fact that the urethra and cervix uteri are the favorite seat of infection in the female. As the mucous membrane is here disposed in folds, in which the germs are retained, not only is the affection rebellious to treatment in these localities, but it tends to become chronic; the ordinary antiseptic and astringent applications only reach the upper surfaces of the folds and not the depressions.

In conclusion, the writer emphasizes the fact that real danger from gonorrhœa, and serious local and general symptoms, only arise when the infection extends above the os internum.

COCAINE-POISONING IN MINOR GYNECOLOGICAL OPERATIONS.

LORENZ (*Centralblatt für Gynäkologie*, 1891, No. 51) has not been successful with cocaine-anæsthesia. In one case he applied a 20 per cent. solution to the endometrium without diminishing its sensibility. In three other cases he injected a 4 per cent. solution into the portio vaginalis, with the following results:

Case I. One-third of a grain of cocaine was injected into the portio previous to curettement. In half a minute the patient had a general sensation of coldness, and was very restless. The pulse was 150, and the respirations became rapid. The pupils were dilated, convulsions followed, and she became unconscious. Nearly two quarts of urine were passed. The symptoms were relieved by inhalations of chloroform, but recurred in a few minutes, being again relieved by inhalations of amyl nitrite. A third attack was relieved in the same way, after which the patient slept for an hour, and awoke complaining of thirst, a burning sensation in the throat, and contractions of the limbs. She felt perfectly well on the following day, but the polyuria persisted for a month.

Case II. One-sixth of a grain of cocaine was injected as before. Exactly half a minute later the patient became restless, complained of coldness and contractions of all her muscles, thirst, and burning in the throat. Pulse and respiration were accelerated, and the patient could not stand. She was revived by a cup of coffee, and the operation (curetting) was completed. Polyuria persisted for two days.

Case III. One-eighth of a grain was injected into the portio previous to dissection, with the same results as in Case II. The writer adds that a hysterical element may have been present in the first case.

SARCOMA UTERI.

GEISER (Inaug. Dissert.; *Centralbl. für Gynäkologie*, 1891, No. 51) states that only eight cases were observed at the Breslau Clinic in the course of ten years. He calls attention to the fact that intra-mural sarcoma has nearly the same symptoms as fibro-myoma, hence the differential diagnosis is difficult. Sarcoma of the endometrium, on the other hand, rapidly degenerates, causing a foul discharge and cachexia. Metastasis is rare, and the duration of the disease is accordingly long—even four years. The prognosis is absolutely bad, and a radical operation should be performed as soon as the diagnosis has been established, which can only be done by the aid of the microscope.

[The writer's observations, based on a small number of cases, are not entirely in accord with those of other observers, especially as regards the duration of the disease and the frequency of metastasis.—H. C. C.]

TERRILLON (*Centralblatt für Gynäkologie*, 1892, No. 7) calls attention to an important diagnostic point in connection with interstitial sarcoma—the rapid growth of the tumor associated with unimpaired general health. In sarcoma of the endometrium thorough curetting and cauterization results in prolonged relief from the symptoms, but neither the palliative operation nor vaginal hysterectomy affords a positive protection against recurrence.

THE RELATION OF INFLUENZA TO DISEASES OF THE PELVIC ORGANS.

GOTTSCHALK (*Centralblatt für Gynäkologie*, 1892, No. 3) noted that during the epidemic of 1890 acute hemorrhagic endometritis was not an unusual complication of influenza. In three instances he observed resulting parametritis, which he attributed to the direct influence of the specific poison of the disease upon the endometrium, the pathogenic cocci possibly reaching the pelvic connective tissue through the medium of the lymphatics, since the Fallopian tubes and peritoncum were not affected. In one case an old parametric inflammation was lighted up during an attack of influenza.

THE ULTIMATE RESULTS OF REMOVAL OF THE ADNEXA.

RICHELOT (*Annal. de Gynécologie*, 1891) reports the after-histories of one hundred and twenty cases, which he classifies as follows:

1. Three patients with salpingo-oöphoritis were entirely cured, and one had persistent pain in the stump;
2. Out of thirty cases of cystic ovaries, twenty were permanently cured; the other patients suffered for a long time, but were finally relieved;
3. Out of thirty cases of chronic salpingitis with adhesions two patients were not relieved for several months, and one menstruated regularly after both tubes and ovaries had been removed;
4. Fifteen patients with disease of the adnexa complicated with retroflexion and adhesion were

permanently relieved; 5. Out of twelve cases of hæmato-salpinx and hæmato-cele (ectopic gestation?) nine were cured; 6. Among twenty-seven cases of pyosalpinx with ovarian abscess one was cured, and several required a subsequent operation; 7. Thirteen operations for removal of the adnexa for the cure of fibroid tumors were successful, pain and hemorrhage being relieved while the growth diminished in size; 8. Normal adnexa were removed in three instances for the cure of hystero-epilepsy with good results, although in one instance melancholia with suicidal impulses persisted for a year and a half, the patient ultimately recovering.

THE RELATION OF INFLUENZA TO THE GROWTH OF INTRA-PELVIC TUMORS.

LECLERC (Inaug. Diss.; *Centralblatt für Gynäkologie*, 1892, No. 6) has made the following interesting observations based upon forty-four cases of uterine and ovarian tumors: In consequence of the increased pelvic congestion during the attack there is a distinct acceleration of the growth of the tumor which continues after recovery; by reason of the general depression of the system attending it, the vital activity of the normal cells is diminished and proliferation of the cells of the neoplasm goes on more rapidly. This increase in the activity of morbid growths is most marked also in cases of tuberculosis of the genitals and peritoneum.

THE ANATOMY AND PHYSIOLOGY OF THE FALLOPIAN TUBE.

MILROY (*Glasgow Med. Journal*, 1891, No. 6) has made investigations, the results of which are somewhat at variance with the prevailing views. He describes glands in the mucous membrane lining the fimbriæ, which secrete a viscid fluid when the latter grasp the ovary, the function of which is to cause more intimate union between them, and thus to prevent the ovum from escaping into the peritoneal cavity. On account of the number of folds in the mucosa, it seems hardly credible, he thinks, that the ovum is forced along the tube by its vermicular contractions. It is more probable that the ovum is drawn into the ampulla by capillary attraction, assisted by the motion of the ciliæ. The inner end of the ampulla, where the folds are scanty, seems to be the most favorable locality in which impregnation could occur. When impregnated, the writer suggests that the ovum is impelled by a "nervous force" (*vis nervosa*) through the isthmus into the uterine cavity.

SO-CALLED GONORRHEAL CYSTITIS.

DU MESNIL (*Virchow's Archiv*, Bd. cxxvi., Heft 3) proves that there is no specific gonorrhœal cystitis, the presence of gonococci in urine withdrawn by catheter being due to the back-flow of pus from the urethra into the bladder. Moreover, these organisms do not cause decomposition of the urine, so that their occurrence in an ammoniacal specimen does not imply that they were the cause of the change. It is probable that the activity of the cocci is hindered, if not entirely destroyed, by the urine.

PÆDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,

OF PHILADELPHIA;

ASSISTED BY

THOMPSON S. WESTCOTT, M.D.,

OF PHILADELPHIA.

AN ASSERTED INFECTIOUS ORIGIN OF RHACHITIS.

MIRCOLI (*Gaz. degli Ospitali*, August 16, 1891, and *Deutsche med. Zeit.*, No. 80, 1891), in previous publications, has reported his discovery of the presence of staphylococci and streptococci in the nervous system in certain nervous affections, such as sciatica, chorea, and hydrocephalus. More recent investigations have enabled him to confirm this result in a new case of hydrocephalus, and, strange to say, in a case of rhachitis. Cultures made from scrapings from the bones of a rhachitic child are said to have given material for pure cultures of these pyogenic micrococci. The most notable point of difference from the results in the other cases was that the colonies of the streptococcus from the bone scrapings of the rhachitic case were not numerous.

The author supposes that in adults the pyogenic micrococci provoke local lesions, while in children they give rise to a general infection, which manifests itself more particularly in the organs that are the seat of greatest formative and functional activity, namely, the osseous and nervous systems.

GASTRO-INTESTINAL HEMORRHAGES IN THE NEWBORN.

In a recent clinical lecture, GRYNFELT (*Nouveau Montpellier Médical*, 1892, No. 7, p. 125) gives a careful *résumé* of this interesting and rare accident. Such hemorrhages, he says, may be divided into two distinct classes, as they are primary and essential, or as developing in the course of an already existing affection, where they are merely symptomatic of the underlying disease. Considering only the first of these classes, it may be said that in the great majority of cases these hemorrhages take place during the first three days after birth (Rilliet, Silbermann, Dusser), though, in a case of the author's, it occurred on the fourth and fifth days, and in two instances, seen by Rilliet, the children were fifteen and twenty weeks old. Sex seems to play no special predisposing rôle, but the influence of morbid antecedents in the parents appears to be a factor of some importance. Pinard, Champetier, Auvard, and others have noted syphilis in the progenitors, but this is regarded by Grynfeldt as only a cause acting indirectly in deteriorating the health of the parents. Hæmophilia has certainly been proven in some instances.

The pathogeny of such hemorrhages is quite as obscure as the etiology. The lesions observed at autopsies are the most variable. Ulcerations of the stomach and intestines have been found; again, only a simple congestion;

while other cases have shown a complete absence of visible lesion. Setting aside the views of other writers, Grynfeldt advances a theory suggested by observations of Billard, and confirmed by personal studies, of the histology of the digestive mucous membranes of newborn infants. These show that the vascular supply of the mucous membrane of the stomach and intestine is exceedingly rich at this period of life. Adding, then, to this state of physiological congestion a congestion or impeded circulation in the liver, he finds it easy to ascribe to exaggerated tension in the portal area the cause of hemorrhages into the digestive tract. This view, he believes, is supported by the fact that these hemorrhages, at first sudden and profuse, quickly cease, thus resembling a true depleting loss of blood.

While vague prodromal symptoms have been described by some observers, notably by Rahn-Escher, it is certain that the first intimation of trouble is generally given by the appearance of the hemorrhage itself. Blood flows from the mouth following efforts at vomiting, or from the rectum, more or less mixed with feces or in clots; quite often both phenomena are coincident, hæmatemesis being usually the earlier. When one alone occurs, hæmatemesis is by far the more frequent. In spite of the gloomy prognosis evidenced by the statistics of Dusser (43 deaths in 78 collected cases), the author believes that a more hopeful view may be taken. The treatment recommended does not differ from that employed in hemorrhages in general. Tannin in syrup of rhatany offers an efficient astringent potion. One and a half to two and a half grains of ergotine in mucilage is employed with satisfaction by Widerhofer, of Vienna.

A CASE OF COMPLETE SUBCUTANEOUS EMPHYSEMA DURING WHOOPING-COUGH.

CROCKER (*British Medical Journal*, February 13, 1892) records a case exhibiting this very unusual accident. The patient was a boy between five and six years of age, suffering from an ordinarily severe attack of pertussis. Two days before he was first seen by the author, the mother noticed that after an attack of coughing the neck below the jaws was a little swollen. This swelling increased rapidly until, at the time of observation, the neck, cheeks, and chest, arms, legs, and trunk were swollen to an enormous size, resembling a series of huge bladders. The eyes were quite closed up, and the head and neck formed a uniform inflated mass. The scalp was blown out in front and at the sides, and the chest and back bulged out like great air-cushions. Death took place three days later. The rupture was supposed to have occurred in the mediastinum, whence, by way of the neck, the air readily traversed the entire subcutaneous tissue.

SPLENIC ANÆMIA IN CHILDREN.

At a recent meeting of the Medical Society of London, DR. WALTER CARR (*British Medical Journal*, February 13, 1892, p. 336) presented a paper based upon thirty cases of splenic anæmia observed at the Victoria Hospital for Children. Sixteen were boys and fourteen girls, their ages varying between six months and two and a half years. They were usually wasted, and more or less anæmic in appearance. The spleen was enlarged, and in half the

cases reached the level of the anterior superior iliac spine. In many instances the liver showed some apparent enlargement, and the internal lymphatic glands were swollen. In the graver cases, hemorrhages and irregular fever were noted. The red blood-corpuscles were decreased in number, varying from 32 to 78 per cent. of the normal, with more or less deficiency in hæmoglobin; while the white corpuscles were slightly in excess, reaching a proportion averaging one white to a hundred red. Ten of the cases died of exhaustion or of intercurrent disease; six could not be followed up, and thirteen had either recovered or were improving. Only one, after two years, remained unchanged. Seven autopsies were obtained. In one case the spleen weighed only one ounce; in the others it varied in weight from four to eight and one-half ounces, the enlargement being seemingly due to a simple hypertrophy with some fibrous hyperplasia. No marked changes were found in any of the other organs. In fourteen cases there was either undoubted or probable evidence of congenital syphilis, and seven of these died; but in a large proportion of the other cases there was no evidence of specific taint, and, even in the most obviously syphilitic, the spleen and the anæmia were not affected by mercury, whence the conclusion that syphilis could be considered only as a predisposing condition. Rhachitis was also shown to have no direct causative influence. The author believes that the disease must be due to a separate cachexia, to which syphilis and rickets predisposed, but which required some other exciting cause. Mercury, arsenic, and quinine proved useless, but improvement sometimes followed the administration of large and increasing doses of iron.

THE ETIOLOGY OF DIPHTHERIA.

BAGINSKY (*Berliner klinische Wochenschrift*, 1892, No. 9, p. 183) reports the results of careful clinical and bacteriological studies upon 154 cases of diphtheria treated under his supervision in the Kaiser- und Kaiserin-Friedrich-Kinderkrankenhaus. In 118 cases Löffler's bacillus was present, while in the remaining 36 only cocci (staphylococci and streptococci) could be demonstrated. The fatality of the disease in the former series (45—nearly 40 per cent.) is strongly contrasted with its mild course and the low mortality exhibited in the cases which were marked by the absence of Löffler's bacillus. Only 4 of the latter series died (11 per cent.), one with severe diphtheritic paralysis, another from complicating measles, and the remaining two from double empyema. These observations lead him to the following propositions:

1. There are two forms of the disease, which to the naked eye exhibit the same changes in the mucous membrane of the pharynx and tonsils. This condition is characterized by the appearance of a firmly attached dirty grayish-white false membrane upon the affected surfaces. Both forms are accompanied by fever, prostration of strength, and swelling of the submaxillary lymph glands. Clinically, they cannot be differentiated; and yet they differ most markedly. One form, distinguished by the diphtheria bacillus, is extremely dangerous and fatal; while the other, exhibiting only the presence of staphylococci and streptococci, is comparatively mild and little dangerous to life.

2. These forms can be distinguished, one from the other, only by cultures

of a fragment of membrane in Löffler's blood-serum, after several light rinsings in a two per cent. boric acid solution.

3. It would appear judicious to apply to the form characterized by the presence of cocci alone, the term already in use among French writers—"diphtheroid."

Touching the etiology of the so-called rhinitis fibrinosa, Baginsky has found, in three cases of this kind examined, the presence of Löffler's bacillus in each instance, and he therefore regards it as a truly diphtheritic process.

Of especial interest is the result of his study of the relationship of cases of scarlatinal diphtheria to true diphtheria. In no case of primary scarlatina exhibiting diphtheritic deposits in the pharynx could Löffler's bacillus be demonstrated, but cocci were frequently found in cases which presented all the naked-eye appearances of true diphtheria. On the other hand, several instances were found where children brought into the hospital with diphtheria and showing Löffler's bacillus in the cultures, suddenly exhibited a scarlatinous exanthem, while at the same time the pharyngeal affection lost its true pseudo-membranous character, and the deposit assumed a more greasy consistence and a dirty gray or greenish color. In such cases fresh examinations failed to show the bacillus previously demonstrable, nothing but cocci being found in these cultures. The natural conclusion would, therefore, be that a new contagium had overcome and supplanted the diphtheritic contagium. In view of these facts, the question at once arises, Was not the true scarlatinal contagium contained in the cocci present in the pharynx?—whether it be considered that these cocci had a specific character, or that they were of an already known species which, under peculiar influences, had developed a power of overwhelming the system with a toxine capable of generating a scarlatinous exanthem upon the skin. In the light of our knowledge of the property of certain drugs to produce a scarlatiniform eruption, these observations suggest to the author a new line of research touching the obscure etiology of scarlatina.

THE FACIALIS-PHENOMENON IN CHILDHOOD.

Some interesting observations have been recorded by JOHANN LOOS (*Wiener klinische Wochenschrift*, 1891, No. 49, p. 915) in regard to the occurrence of this asserted pathognomonic sign of tetany in other affections of childhood. In eighty cases of diseases in no way presenting the other symptoms of tetany he was able to elicit this sign, forty-six of the patients being girls and thirty-four boys. Only five were under one year of age, while the others ranged from one year to seventeen years. Direct excitation of the nerve was obtained by percussion at a point above or external to the labial commissure. Dividing the cases into three general groups, the author was able to demonstrate this sign as follows:

1. In functional neuroses: neurasthenia, nine cases; hysteria, nine girls; chorea, two cases; in three girls who had had tetany during the previous winter; and, finally, in two boys with epilepsy.

2. In organic diseases of the nervous system: encephalitis, idiocy with spastic contractures, peripheral neuritis, glioma of the brain, disseminated

sclerosis, tubercular meningitis of the base, diphtheritic paralysis of the uvula, facial paresis, and hydrocephalus, of each one case.

3. In other morbid states: anæmia, six cases; phlegmonous angina, one case; gastro-intestinal catarrh, three cases; late rachitis, two cases; typhus, two cases; whooping-cough, scrofula, tuberculosis, and cystitis, of each one case.

In all these cases except four there was an exaggerated excitability of the nerves and muscles; and in twenty-five cases examined separately for the knee-jerk this phenomenon was found increased.

It is scarcely necessary to say that the facialis-phenomenon was not observed in all cases of the above groups examined; but in the functional nervous affection it was quite constant. Apart from diseased conditions, this sign was present in twenty-eight children, some of which, perhaps, were slightly anæmic, but all in ordinarily good health.

Another point of interest brought out by these investigations was the fact that in nine cases the phenomenon was also found in the mother, brothers and sisters of the patient.

Ordinarily the sign could be elicited on both sides, and the duration varied from several days to several weeks. It therefore seems proven that except for tetany this phenomenon possesses no diagnostic value. In certain cases it is the expression of a bad state of health, in others, of an inherited excitability of the nervous system. Whether there be any anatomical lesion of the nerve, like a perineuritis, as Schlesinger believes, must for the present remain an open question.

NOCTURNAL ENURESIS CURED BY EXCISION OF LUSCHKA'S TONSIL.

KOERNER (*Centralblatt f. klin. Med.*, 1891, No. 23, p. 417) reports the cure of nocturnal enuresis in two girls, one nineteen years old, the other three years, following the extirpation of Luschka's tonsil, which in each case was considerably hypertrophied. This cure was immediate and complete. These cases, therefore, illustrate the important part that nasal obstruction may play in the pathogeny of nocturnal enuresis. The coexistence of hypertrophy of Luschka's tonsil and the nocturnal incontinence of urine of childhood (already remarked by Major, Ziem, Bloch, and Schmalz) is, however, so unusual that it is necessary to consider that without the existence of some predisposing weakness of the sphincter vesicæ, adenoid vegetations of the pharynx could not alone excite incontinence.

CASES OF ATROPINE AND OPIUM POISONING IN EARLY LIFE.

ROTCH (*Boston Medical and Surgical Journal*, 1892, No. 10, p. 231) puts on record several cases of toxic symptoms produced by one or other of these drugs in young children. Two sisters, one nine years old, the other four, were brought to the hospital with the statement that they had drunk between them an ounce of a solution containing two grains of atropine. They had been made to vomit freely by emetics two hours after drinking the solution. On admission to the ward the older child was partially unconscious, pale, with a pulse of 120, of good strength and regularity; respiration was regular, quiet, and about normal in rate; temperature 99°; tongue coated and dry; pupils widely dilated and inactive. Occasional convulsive movements, chiefly con-

fined to the upper extremities, were also observed. This child recovered without treatment by drugs. The younger sister was in a more serious condition, but also recovered after a hypodermatic injection of two minims of Magendie's solution. One-half to one grain of atropine has been considered a fatal dose for an adult. The probability is that these children did not get a grain each; but the bottle had had only a few drops taken out of it before they emptied it. Another little girl, two years of age, was brought to the hospital in the morning with the history that the mother had tried to poison her during the night by giving a teaspoonful of laudanum, that this was vomited, and that the same dose had been repeated, with possibly more later. Respirations were down to six to ten a minute. She recovered under the usual treatment, with the internal administration of strong coffee and subcutaneous injection of several small doses of atropine ($\frac{1}{32}$ gr.). Another child, seven years of age, recovered after the ingestion of $\frac{1}{16}$ of a grain of morphine. While not sufficiently numerous to give data for any conclusions as to the toleration of these drugs in childhood, these records serve to show that the physician need not despair of saving a little patient's life in cases where the amount of the drug ingested seems very formidable.

THE TREATMENT OF HICCOUGH BY DIGITAL COMPRESSION OF THE PHRENIC NERVE.

LELOIR (*Revue Mensuelle des Maladies de l'Enfance*, March, 1892, p. 135) describes a very simple manœuvre which he has used with success in immediately checking obstinate hiccough. The first case in which he observed its happy effect was that of a little girl, twelve years old, who for a year had suffered from intractable hiccough, occurring every half-minute. The left phrenic nerve was strongly compressed for three minutes with the finger between the two sterno-clavicular attachments of the sterno-mastoid muscle. At the end of this time the spasm had completely ceased and did not again recur. The author has tried this plan in a number of acute and chronic cases, and always with success.

Corrigendum.—On page 251 of the March issue of the JOURNAL, for the description of Fig. 7 (Maunsell, "Intestinal Surgery") should be substituted, "Representing the junction of large and small intestine by circular enterorraphy."

Note to Contributors.—All contributions intended for insertion in the Original Department of this Journal are only received *with the distinct understanding that they are contributed exclusively to this Journal.*

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ARTERIO-VEINUS ANEURISM OF THE COMMON CAROTID
ARTERY AND INTERNAL JUGULAR VEINS; DOUBLE
LIGATURE OF BOTH VESSELS; RECOVERY.¹

BY W. W. KEEN, M.D.,

PROFESSOR OF THE PRINCIPLES OF SURGERY AND OF CLINICAL SURGERY TO THE
JEFFERSON MEDICAL COLLEGE.

R. F., aged sixteen years, on November 24, 1890, was stabbed by another boy, with a pocket-knife, on the right side of the neck. There was instant and very profuse loss of blood, so that he fell to the ground before he could get to Dr. Deering's office, which was only about one hundred feet away. The doctor placed a compress over the wound, but on account of the boy's desperate condition did not tie the vessels. Pressure was applied from that time until I saw him; no other treatment had been used. He had frequent attacks of epistaxis after the accident.

He was kindly referred to me, March 10, 1891, by Dr. D. M. Crawford, of Mifflintown, Pa. I found him in the following condition: There was a scar one and one-eighth inches long at the site of the stab, at the internal border of the sterno-cleido-mastoid muscle, on a level with the lower border of the thyroid cartilage. The sterno-mastoid was markedly thinned, so that apparently there was only skin and superficial fascia between the arterio-venous aneurism which had formed, and my hand. With every pulsation the skin over an area about three inches vertically and two inches transversely showed a series of vibrations like a partly filled water-bag. The hand felt a thrill over a large area, from the middle line to the anterior border of the trapezius, and from the clavicle to within half an inch of the lobe of the ear. This thrill was very distinct, and was increased with each heart-beat. An aneurismal rasping bruit could be heard with the stethoscope, not only over the site of the tumor, but throughout the entire circumference of the neck, on the left

¹ Read before the Philadelphia Academy of Surgery, April 4, 1892.

side as well as on the right, over the whole of the head, all of the anterior portion of the chest, down the back as far as the lumbar region, in the right axilla, and also nearly down to the right elbow. The impression given an observer was that the tissues overlying the aneurism were thinning gradually, and before very long would probably burst.

An attempt had been made to cure the aneurism by the continued pressure of a bag of shot. His head was held in a fixed position, with the chin strongly rotated to the left, and the right ear bent markedly toward the right shoulder, with, of course, a similar flexion and rotation of the cervical vertebrae, which seemed almost to have become permanent. Whether this was a result of the shot-bag, as seemed likely, or of the wound itself, was a little uncertain. He had great discomfort, not only from the noise of the thrill and the pain in the wound, but also from the constrained position of the head. This was also a marked deformity, and attracted constant attention from strangers.

Dr. Howard F. Hansell kindly examined the eyes, and reported the fundus entirely normal.

Operation, March 13, 1891. An incision four inches long was made from the sterno-clavicular articulation, just above the clavicle. Another incision was carried from the same point along the internal border of the sterno-cleido-mastoid muscle, and gradually, as the need arose, was carried all the way up to a point a little above the angle of the jaw. (See figure.) The external jugular vein was ligated; it was of large size and pulsating. The sterno-cleido-mastoid, both the sternal and clavicular portions, was cut through and lifted with the flap of skin, and gradually and most carefully in this way the deeper structures of the entire neck were laid bare. A transverse vein just above the clavicle, possibly the transversalis colli, was distended and pulsating. It was accidentally nicked in cutting through the sterno-cleido, and a lateral ligature was applied. It was so large that at first it was thought it might be the subclavian. Later in the dissection, however, the subclavian was seen enormously distended at a deeper level. The jugular vein was found to be distended to an inch and a half in diameter, and to be closely adherent to the carotid artery. The artery was normal in size and appearance. After a very tedious and difficult dissection, especially at the site of the wound, the vein was isolated from the soft parts and from the pneumogastric, and after a similar difficult isolation of the carotid, separate ligatures of silk were thrown around each vessel at the lower part of the neck. The dissection was then continued upward until, at a point a little below the angle of the jaw, the vein suddenly narrowed to nearly its ordinary diameter. The vein at this point was then secured by a silk ligature. A very painstaking dissection had been required to separate the nerve from the vessels at this point. During this procedure a rent was unavoidably made in the vein. Its edges were quickly seized and held fast with three hemostatic forceps, which lay parallel to each other during the dissection, and were not removed until the ligature had been placed above them. The carotid was then secured just below its bifurcation. No phenomena occurred during the ligation of either vessel. As the sac was already opened by the accidental rent above described, and also still seemed to show slight pulsation, I deemed it wise to lay it widely open in order to determine whether any other vessels communicated with it which might cause a serious later hemorrhage. When opened, the wound in the carotid artery was seen to be a slit over

half an inch long, readily admitting the tip of my forefinger. A small artery was bleeding near the opening, and was secured by a ligature. I attempted to remove the sac, but found its adhesions so firm and extensive that I thought it more prudent to leave it. At the close of the operation the wound was thoroughly washed out with a hot bichloride solution and then closed; but it had to be immediately reopened before dressing, as I found there was considerable bleeding from two vessels in the flap—one at the lower and one at the upper end—which required ligatures. The wound was then again closed and dressed with an ample sublimate dressing.

The entire operation, including the securing of the later bleeding vessels, took a little over two hours. The boy recovered very quickly and quietly from the ether, and felt very comfortable. There was almost no shock, as the result either of the operation or of the ligation. His mental condition was perfectly clear.



Arterio-venous aneurism of common carotid artery and jugular vein, showing the sterno-mastoid and the clavicular scars of the operation.

March 16 (3d day). Yesterday afternoon he had a rather sharp attack of bleeding from the right nostril, and his mother now informs me that he has been especially subject to these attacks since the accident. This morning when the Resident disturbed the clot the bleeding commenced again, but was readily checked with a little alum solution applied with an atomizer. Yesterday (2d day) the drainage-tubes were removed, and to-day, on re-dressing the wound, I found it looking so well that I removed the alternate stitches. His temperature, which had a post-

operation rise once up to 101° , is to-day normal; appetite good, and he slept eight hours last night. The right temporal artery is beating this morning, but in consequence of absence after the operation I am not able to say exactly when the pulsation first returned. I directed him to be kept as quiet as possible, so that until there is definite healing there shall be nothing to favor a secondary hemorrhage.

December 22. From the moment of the operation the wound progressed favorably, and, excepting that at one point at the lower end of the wound, a small sinus persisted for two or three weeks, nothing untoward occurred. There were several later slight attacks of epistaxis, but they were quickly checked by a spray of alum.

He was kept in bed until the eighteenth day, lest some accident should occur, especially to the jugular. This was so enormous that I hardly dared trust it until then. After leaving his bed he was encouraged to attempt to correct the deformity in his neck, but his efforts were only partially successful. After leaving the hospital, however, he gradually straightened the neck and obtained full motions of the head in every direction. His health is entirely reestablished in every way (March, 1892). The accompanying figure from a photograph shows his present condition and the scars of the operation. The scar of the wound is lost in that of the operation. On April 2, 1891, Dr. Hansell reported the eyes unchanged in any way as a result of the operation.

REMARKS.—I have been particularly interested in this case, not only because it is without exception the most difficult dissection of the neck I have ever had to do, but also because, just after the case was first referred to me, I read Dr. B. Farquhar Curtis's excellent paper in *THE JOURNAL* for February, 1891. In that paper Dr. Curtis expresses the view that cases involving the internal jugular should not be treated by operation.

In a private letter to me he states that his reasons are: First, that these aneurisms in the neck, especially those involving the internal jugular, as a rule cause very little disturbance, and that very few of them would warrant any serious operation. Secondly, they are surrounded by such important vessels that extirpation would be exceedingly dangerous to life, the dissection being in a region where the bloodless method cannot be employed. Thirdly, Stimson has shown (*THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, April, 1884, p. 325) that for some unknown reason ligation of the carotid is more dangerous in these cases than in cases of ordinary aneurism.

Curtis adds, however, that these reasons are theoretical, and says: "Of course, with our new methods, we are rewriting the history of many operations, and theoretical reasons are always in danger of being overthrown by practical experience. Personally, I should desire very marked disability and discomfort in a patient before being willing to operate on these cases."

To a very large extent I share Dr. Curtis's opinion. But this case seemed to me to present sufficient disability and also sufficient danger to

make even a perilous operation justifiable. The result certainly has proved the wisdom of this course; and the boy is entirely well from an aneurism which otherwise might have ruptured and caused speedy death, to say nothing of the deformity and the constant discomfort to which he was subjected. Moreover, two lives hung upon the result, for the boy who stabbed him was in jail for a number of months, and was only released after the definite cure of the patient.

In many cases of arterio-venous aneurism the artery is markedly altered. This was not the case here. The artery in every respect, so far as eye and touch could judge, was entirely normal; but the vein was distended to an enormous size, and, curiously enough, narrowed suddenly at the upper end of the neck. Pressure had been applied continuously from the time of the accident until he was placed under my care. Not only had it done no good, but I am inclined to think it had done positive harm, except at first when it checked the hemorrhage; for to this cause must be attributed the rotation and lateral curvature of the neck—a source of great discomfort as well as a marked deformity.

I attempted, it will be seen, after double ligature of both vessels, to extirpate the sac, as has been done of late with such admirable success, as shown by Dr. Curtis. I abandoned the excision, inasmuch as the operation had been very long, and the attachment of the sac to the pneumogastric, and probably also to the sympathetic nerve, was so intimate that I was convinced I would do more harm than good by proceeding. I laid open the vein, however, in order to see whether there was any branch uniting the artery and vein between my ligatures, which were far apart. It was fortunate that I did so, for had I not, the vessel which I found still opening into the sac might have kept up trouble, and even made the operation futile.

A CASE OF ACROMEGALY.

BY O. T. OSBORNE, M.D.,

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THE following case of acromegaly has been under my care for the last few months, and is, I believe (November, 1891), the eighth case reported in the United States:

Mr. X., German, aged forty-two years, born in Westphalia, Germany; has lived in America eleven years. The family history is as follows:

The father two years ago was living at the age of eighty years. The mother died at the age of forty-four years, when the patient, Mr. X., was ten years old. Two years before her death she became "paralyzed in the legs," then gradually the arms were paralyzed, and finally, six

months before she died, she lost her speech. Two sisters are living in good health at the ages, respectively, of thirty-six and forty-eight years. One brother died of phthisis pulmonalis at the age of twenty-four years. One infant brother died. One sister died at the age of fifty years; cause of death unknown. The father's father died young, of unknown cause. The father's mother's age at death and cause of death unknown. The mother's father died young, of unknown cause. The mother's mother died of old age. The father is about five feet five inches in height. The mother was about five feet seven and a half inches in height and quite stout. The younger living sister is also of good size and stout.

The patient's history of offspring is as follows: His wife's first child was a boy, who lived to be eighteen years old, and died of phthisis pulmonalis about two years ago. He was always a weak child, subject to headache and nose-bleed, and when a young boy had "bad feeling" in his head, and cold applications were frequently applied. When young he was not as bright as other boys. The second child was a boy, and died of croup at three years. The third child was a girl, who died of tuberculosis at one year two months. The fourth, a girl, died at three years, of croup. The fifth, a boy, died of diarrhoea at eighteen weeks. The sixth pregnancy terminated with miscarriage at three months. The seventh and last pregnancy terminated with miscarriage at two months. The wife is and has been in good health.

Mr. X., from the age of fifteen years till the age of twenty-four years had frequently recurring and often severe epistaxis. When he was twenty-two years old he had a very severe and almost fatal hemorrhage from the nose. From the age of twenty-four years until four and one-half years ago the patient suffered no serious impairment of health.

The symptoms during this period of fourteen years were—continuous, gradual enlargement of hands, feet, head, face, and body; occasional headache, often severe; occasional dizziness; occasional bone or joint pain; ravenous appetite and often troublesome dyspepsia.

The growth of the body is evidenced by the patient's personal history of facts, and by the facts furnished by his wife. On entering the German army, at the age of nineteen years, he weighed 165 pounds; he now weighs 225 pounds. During the last eleven years, since he has been in America, he has been compelled to buy, year by year, larger and larger hats, shoes, and shirts. His shoes have, during these years, always been procured at one store. Some few years ago he could wear next to the largest size made, then he must get the largest, and now, for the last three years, they must be made to order, as shoes large enough are not kept in stock, and the shoemaker informs me that, since making the last, three years ago, he has had to enlarge it for the comfort of the foot.

A silk cap (which was unfortunately destroyed) worn by him when he came to New Haven, eleven years ago, was tried on by him one year ago, and could be set only on the top of his head. He has also been compelled to buy larger and larger shirts.

During the last ten years he has had more or less tinnitus aurium, but four and one-half years ago the ringing in the ear began to be continuous, and very troublesome. At the same time he also complained of not seeing well, and even had his eyes examined, but nothing abnormal was found.

Soon the pain in his head became constant and very severe, and was always referred to a small spot on the top of the head. The ringing in the ears now became unbearable, especially at night. The head-pain was also much worse at night, and for about one month at this time (four and one-half years ago) he was entirely irresponsible for his actions during the night-time.

His wife was compelled to secrete and lock from him all sharp instruments and all bottles of medicine, as he several times attempted to commit suicide. He also, once or twice during this month, endeavored to choke his child to death. Nevertheless, invariably, as soon as it was light in the morning, his brain seemed to resume proper action, and he would soon go to sleep and rest from the night's wakefulness and activity.

During the day he was very weak, but as soon as night came on he was strong, up, and doing. During the month he complained much of a pressure feeling on the top of his head. Suddenly, after one month of this experience, he ceased to have *continuous* head pain, and was no more deranged at night, and has never been since. At this time the diagnosis of "brain tumor" was given.

From that date, four and one-half years ago, up to the present time he has had constant, never-ceasing ringing in the ears, with gradually increasing deafness, frequent attacks of severe headache, neuralgia in various parts of the body, most frequent and marked on the right side. The pain was referred to back, right thorax, abdomen, right knee, and finger-joints of both hands. For one year after the severe attack of head trouble he was unable to work, but has now, for three years, been working more or less regularly at his trade—machinist. He is, however, becoming more and more incapacitated for work by pain in his head, dizziness, and tinnitus aurium.

He has now been under my care for some months, coming with the following general symptoms: Severe headache, pain in the right knee, ringing of the ears, irregular appetite, constipation, palpitation of the heart; often eye blurs; must pass urine once or twice every night; profuse perspiration; often dizzy; difficulty in procuring sleep on retiring—in fact, the symptoms are the same as the beginning of the severe head trouble of four and a half years ago.

The patient thinks his face swells in the morning, and also says his hands and right leg swell. No œdema, however, was ever found.

Repeated examinations of the urine have shown varying daily quantities, widely varying specific gravity, occasional small amounts of albumin; never sugar; no sediment other than deposit of urates, and no casts.

Sacral and lumbo sacral pain was often complained of; also pain in the right lateral region of the thorax. He also very graphically describes a frequent nervous ("blood flow," he says) sensation starting from the top of his head and coursing down through his body into his legs, and ending in his feet. He described it as something between an electric shock and a flow of liquid; but upon my suggesting the "rolling of shot" as possibly describing the sensation, he immediately claimed that that was exactly the feeling.

He has now had for several months, gradually growing more frequent, attacks of sharp pain and a peculiar pressure feeling in the top of the head; the pain is referred to the small spot before mentioned, thumb-

tip in size, exactly over the region of the anterior fontanelle. The feeling of pressure and pain causes him to grasp for support whatever is within reach, with the positive impression, at each attack, that he is about to die. The feeling of pressure and pain, with dizziness, passes or "spreads over the body and passes off at the feet." At the time of this head pain he often had severe pain in the right side of the nose, a deep-seated pain. Pressure over the region of the anterior fontanelle at all times showed tenderness, and that over a region only of the size of a five-cent piece. Abdominal pain is often complained of—most severe in the hypogastric region, and often referred to the glans penis, though there is no pain on passing urine or modified flow of urine.

The kidneys are, in all probability, slightly damaged. The heart and lungs are normal. Careful examination of the eyes has failed to show anything abnormal, though the retinal vessels are perhaps over-full. He is quite deaf in both ears, but hears best with the right. The ear findings are quite interesting, and for the minute and complete examination of the ear I am indebted to my colleague, Dr. H. L. Swain. His examination and report is all the more valuable, as he saw and examined the ears of the patient three years ago. The right ear is larger than the left, being 13 mm. broader; but the thickness and the distance from the head is the same. The length of the right ear is 73 mm. Since the examination of the ears three years ago, the external auditory canals of both ears have become narrowed antero-posteriorly, and the right more than the left. The general dimensions of the canals are larger than the average. The perpendicular measurement of the canal at the external orifice is 10 mm. The width of the canal, antero-posteriorly, of the right ear is 2 mm.; of the left ear, 6 mm.; the difference being due to the projection forward of the posterior wall of the canal of the right ear from thickening of the cartilage. The cartilaginous canals of both ears remain of the same general shape and dimensions as above given, until the bony canal is reached, at which point both canals are narrowed perpendicularly. The narrowing of the bony canal in both ears is due to the growth downward of the superior bony wall, amounting in the right ear to an actual exostosis.

In the immediate neighborhood of the drums the canals assume the normal size. The drums are exceedingly concave, so much so that the hammer in the right ear lies almost horizontally. The drums are practically immovable.

The tuning-fork is heard upon the vertex as long in the right ear as it is normally heard upon the mastoid with the ear stopped.

The tinnitus is distinctly hæmic in origin, increasing on excitation, on lying down, and whenever he has one of the "pressure attacks," as previously described, and is often pulsating.

The tinnitus is always referred to the middle of the head.

Dr. Swain states that "it would seem impossible for the hammer to become so drawn up, and the drum to become so concave, as is seen in the right ear during the three years since my first observation, without an active inflammation of the middle ear, of which there have been no symptoms in the last twenty years."

Here we have positive proof of bone-growth, and the excess being on the side which showed the greatest development all over the body, viz., the right side.

A study of the two photographs showing the face and head, also shows the growth of bone. The first was taken in 1887, and the second at the present time. Had the photograph of four years ago been seen by me earlier, the second photograph would have been taken in the same position. Nevertheless, the difference in degree of the projection forward of the lower jaw, the increased prominence of the frontal eminences and the superciliary ridges, the retraction of the forehead, the increased size of the nose and ears, and the deep furrowing of the superabundant skin and muscle over the forehead of the later photograph, can all be seen.

FIG. 1.



Photograph taken in 1887.

FIG. 2



Photograph taken in 1891.

A few of the measurements are as follows: The height is 1754 mm. (5 ft. 9 in.); the length of the right foot is 312 mm. ($12\frac{1}{4}$ in.); the length of the left foot is 300 mm. ($11\frac{3}{4}$ in.); the circumference of the right knee is 420 mm. ($16\frac{1}{2}$ in.); the circumference of the left knee is 400 mm. ($15\frac{3}{4}$ in.); the circumference of the abdomen is 1093 mm. (43 in.); the circumference of the thorax at the level of the ensiform cartilage is 1144 mm. (45 in.); the circumference of the chest at the nipple line is 1157 mm. ($45\frac{1}{2}$ in.); the circumference of the chest under the arms is 1119 mm. (44 in.); the length of the right hand from the tip of the styloid process of the radius to the end of the index-finger is 225 mm. ($8\frac{3}{4}$ in.); the length of the left hand, same measurement, is 222 mm. ($8\frac{5}{8}$ in.); the circumference of the right hand, exclusive of the thumb (glove measurement) is 280 mm. (11 in.); the same measurement of the left hand is 267 mm. ($10\frac{1}{2}$ in.); the distance between the central lower incisors and the central upper incisors when the jaws are tightly closed is 10 mm. ($\frac{2}{5}$ in.); the circumference of the head around the upper supra-orbital ridges and the occiput is 610 mm. (24 in.); the distance from the angle of the lower jaw to the symphysis is 140 mm. ($5\frac{1}{2}$ in.). (All of the above measurements were taken with the tape.)

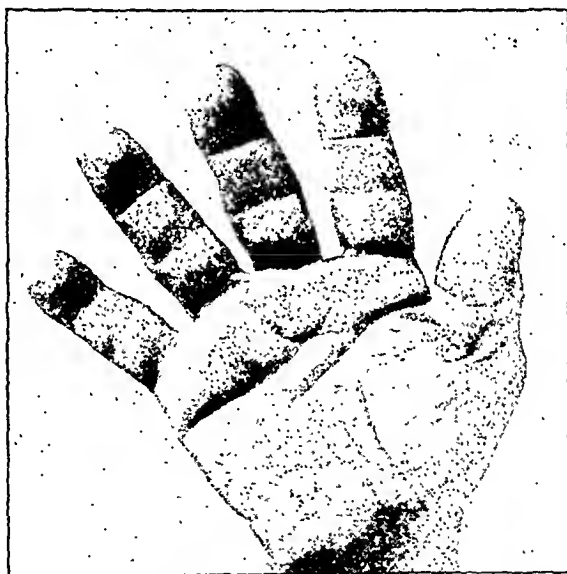
The symptoms and external manifestations of acromegaly present in this case I will give in detail, but I wish at this point to thank Dr. William H. Carmalt for confirming the diagnosis and carefully going over the case with me.

A notable result of acromegaly is seen by a reference to above measurements of the height and length of the right foot. Normally the ratio of the foot to the height is 1.6, while the patient is only 5.6 times the length of the right foot in height.

The right side of the whole body, right hand, right thorax, right knee, and right foot, as seen above, is more enlarged than the left. The right side has also been the most frequent seat of pain, especially of joint pain. Just underneath the skin, on the right lateral thoracic region, is a small, hard nodule, movable, somewhat tender on pressure, and the seat of quite constant pain. Frequently, also, pain radiates from this nodule downward and over the abdomen, centring in the hypogastric region.

The abnormal bone- and tissue-growth began when the patient was from twenty to twenty-two years of age. He had enormous growth of the hands and feet, both out of all proportion to the growth of the arms and legs, as is seen in the respective photographs of the hand and foot

FIG. 3.



Right hand, palmar surface.

(both right). Palpation of the hands shows a decided bone-growth, as well as hypertrophy of the soft parts. The fingers are "sausage-shaped," *i. e.*, the tip of each finger is as large as the metacarpal end, and the breadth is out of proportion to the length. The joints, especially the last phalangeal joints, are enlarged. The lines in the palm of the hands are greatly accentuated, as so well shown in the photograph. The wrist is but slightly enlarged, and the forearm and arm are apparently not at all enlarged. The feet are very greatly enlarged, and, as before stated, the right is larger than the left. There is a large cushion of flesh along the outer side of the foot, very characteristic of this disease (Marie). The os calcis of each foot; the malleoli, the heads of the fibula and tibia of each leg; the patellæ, especially the right, and the condyle of each

femur, are all enlarged. The legs and thighs are not hypertrophied, and the left gastrocnemius muscle seems atrophied.

The thorax is greatly enlarged, the sternum projecting forward at the lower part. The antero-posterior diameter is more increased than the lateral diameter of the chest, and the lower part of the thorax gives a greater circumference than the upper, as is seen in the above measurements, viz., 44 inches in circumference under arms, 45½ inches at nipple line, and 45 inches just below ensiform appendix. The thorax on inspiration moves forward in the peculiar manner described by Marie. The scapulae and pelvis are enlarged. The knee-joints are enlarged and are the seat of the greatest joint pain, the finger-joints suffering also frequently. The cranium itself does not seem much altered, but the face is elongated, brow low, supra-orbital ridges very prominent. There seems to be a slight exophthalmia. The eyelids are but little hypertrophied. The nose is very much enlarged and broadened, especially marked by a flattening of the cheeks. The cheek bones are fairly prominent. As before stated, the skin of the forehead is redundant and deeply wrinkled. The lower jaw is greatly enlarged, and projects very much forward to the upper jaw, so much so that the upper and lower teeth do not meet until the second molar teeth are reached. The distance, as previously stated, between the central incisor teeth of the upper jaw and the central incisors of the lower jaw is three-eighths of

FIG. 4.



Photograph taken in 1891.

an inch; hence the mastication of the food is difficult and incomplete, and thus causes, or at least augments, the dyspepsia. The lower lip is greatly hypertrophied and everted. The upper lip is not much, if any, enlarged. The tongue is very much hypertrophied. It is much broadened, filling the whole enlarged oral cavity, rendering the speech thick, and with the labials and dentals poorly articulated. The voice is deep, heavy, and loud, denoting an enlarged larynx. The neck is short and thick, sinking the head between the shoulders. The thyroid gland does not seem atrophied. There is scoliosis and kyphosis of the upper dorsal region of the spine, as is plainly brought out in the photograph. The

skin in this case is as yet in good condition, though the thighs are covered with coarse hair.

The scalp-hair is profuse and coarse. Several years ago the appetite was ravenous, but now seems about normal. The sexual appetite is greatly diminished, but the patient is not impotent.

The brain functions are not, as yet, impaired, except possibly a slower mentation and frequent forgetfulness. The so-called "shot-feel" is present, as before described. Sensation of heat and cold apparently normal. The station is normal. The right patella reflex is absent; the left very much diminished.

The severe headache, dizziness, and marked ear symptoms are present. The eyes are not much affected. I find no dulness denoting the persistence of the thymus gland, but the marked projection of the sternum forward, even at its upper part, could easily render the percussion note resonant though a large thymus gland lay more deeply seated.

Now, have we in this case the symptoms of an enlarged pituitary body? Yes. The enlarging pituitary gland would naturally tend to press in the direction of the least resistance. The least resistance can be only out of the sella Turcica, either laterally toward the cavernous grooves or upward and forward toward the middle clinoid processes. The excess of pressure in either direction will depend upon the bony environments of the sella Turcica, and in either case the enlarging pituitary body reaches bloodvessels.

If the bone formation of the sella Turcica is such that the first pressure is exerted laterally, the internal carotids and the cavernous sinuses are pressed upon, and the soft-walled sinus is most affected. By this pressure we then have a venous hum in the ears, and, the pressure being continuous, the tinnitus will be continuous. The difference in the intensity of ringing in the ears might be due to an asymmetrical enlargement of the pituitary gland, but is more probably due to the bone formation of the sella Turcica allowing freer passage of the gland on one side than on the other. The middle clinoid process being more prominent on one side than on the other—a frequent condition—the enlarged gland would press more on the opposite bloodvessels. This is probably the condition in this case.

On the other hand, the middle clinoid processes being small, the enlarging pituitary body would come upward and forward and press directly upon the ophthalmic veins and arteries, perhaps more on one side than the other, as before, and would cause a retarded blood-flow in the eye, and consequently more or less prominent eye symptoms, as has been recorded in some cases of acromegaly.

We can, then, account for (omitting the added factor of the concave drum) the dizziness and tinnitus aurium of this case; and very probably the severe head-pain, vertigo, and unbearable ringing of the ears, in the attack of four and a half years ago, was due to first pressure of the enlarged pituitary body on the bloodvessels.

The pituitary gland is very vascular, and this enlarged vascular body would be easily affected by varying blood-pressure in the brain, becoming dilated when the patient assumed a recumbent position, or when he became excited—thus increasing the pressure on the vessels in the cavernous grooves, and *ipso facto* increasing the dizziness and ringing in the ears.

Now, as to the pain in the top of the head, which is referred to by the patient as located in a spot covered by his finger-tip. This point or spot designated as the seat of the severe pain and constant soreness, and increased pain on lying down (when the pituitary body enlarges with the greater amount of blood), is in the exact region of the anterior fontanelle. The anterior fontanelle, on the other hand, is absolutely perpendicular over the sella Turcica and the position of the pituitary gland. Is not this painful spot caused by the direct pressure of the enlarged gland, even allowing for the brain being surrounded by fluid, and hence generally a generalization of pressure?

The ultimate history of this case I hope to be able to watch.

Thus far the treatment has but partially relieved the uncomfortable symptoms. At present I am trying the efficacy of long-continued use of ergot, hoping by it to control some of the brain symptoms.

GLANDULAR TUBERCULOSIS AND ITS OPERATIVE TREATMENT.

BY ERNEST F. NEVE, M.D., F.R.C.S. ED.

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In the présence of tuberculosis of the lungs even modern surgery is still almost powerless. The importance of the organs concerned and the dangers of hemorrhage and sepsis constitute formidable obstacles to success.

In glandular tuberculosis the case is different. We have, it is true, a similar tubercular infiltration, with the same tendency to caseate and to suppurate and form cavities. But until the process is far advanced the conditions are aseptic; and when treated surgically the dangers of hemorrhage are quite inconsiderable, while in many cases the possibility exists of removing the whole of the disease without depriving the patient of vital organs.

During the past few years, sixty-eight operations have been performed, in this hospital, for glandular swellings. I have before me notes of thirty of these cases.

1. ETIOLOGY.—The disease was most common in young adults. The

average age of my cases was twenty-six years. The oldest patient affected was forty-five, the youngest seven. Twenty-five were females. The duration of illness was usually a few months, or one or two years. One case was of six years' standing. The predisposition is no doubt connected with a phthisical tendency in the family. In this country this is more apt to exist on the mother's side, as the women of the better classes lead a somewhat secluded and in-door life. Hereditary tendency, then, and exposure to a close atmosphere are predisposing causes. In young infants glandular enlargements are common. They are often associated with dentition, and are usually simple inflammatory swellings, which are amenable to ordinary treatment and completely disappear. Sometimes, of course, they suppurate; especially is this the case where there is some local irritant such as eczema or favus. Dentition does not appear to play an active part in the development of scrofulous glands. Many of my cases were more than twenty years of age. In one instance, carious temporary teeth were a suspected exciting cause.

CASE I.—Azizi, female, aged seven years; six months ill. Gland, size of a bantam's egg, in the left parotid region and a small one (marble) on right side. Has several very bad teeth and rotten stumps with thickened gums. The larger gland was excised by Mr. A. Neve. It was of pink color with a caseating point the size of a filbert. Ten days in hospital. Cured.

In the majority of cases it appears probable that the tubercular disease has penetrated the first line of defence—the adenoid tissue of the mouth and throat—and is arrested in the first lymphatic glands to which it comes, usually the submaxillary. From thence it spreads in succession to the superficial, and the deep cervical glands. In some cases, perhaps, glands already damaged, form a nidus for tubercular virus carried by the circulation.

As a rule, it seems rare to find phthisis and tubercular glands co-existing at the same time. Perhaps this is because the glands acting as filters protect the lungs. If, however, a filter is polluted, it is worse than useless. So when the lymph glands are full of tubercular matter, one would expect them to be an actual source of danger. Some years ago I saw a case which is suggestive in this connection.

CASE II.—Miss H., aged twenty years, had an enlarged gland in the right submaxillary region the size of a pigeon's egg, freely movable and with a fluctuating feeling. She developed rapid acute phthisis, and at the same time I noticed a diminution in the size of the gland. Its rupture into the cellular tissue may have started the lung disease.

In another case,¹ one of advanced tubercular glands, phthisis was present. I removed the diseased glands and the wounds healed well, but the patient died some weeks later from the phthisis.

¹ See Case XVII.

After the removal of a large number of glands, it is probable that a patient may be more susceptible to phthisis. He has lost two or three lines of defence.¹ Obviously, however, if the glands are not only useless, but themselves a source of danger, they are better away.

2. PATHOLOGY.—*Position and size.* In eight cases the glands were chiefly submaxillary and varying in size from a filbert to a Malta orange. In two, the parotid region was affected as well as the submaxillary. In five, the parotid region was the chief site. In fourteen, there was a general invasion of the neck, especially the anterior triangle; and in five of these, there were large glands behind or underneath the sterno-mastoid. Usually, the upper half of the neck is that most attacked. Sometimes, however, diseased glands extend right down to, and even behind the clavicle.

CASE III.—Khurshi, female, aged thirty years. Swelling of neck for two years, has been increasing rapidly for three months. Large number of hard glands on right side, of varying size, the largest as big as walnuts. About thirty were dissected out, chiefly behind and along posterior border of sterno-mastoid. A mass in front adherent to internal jugular vein. Enlarged glands extend right away down behind clavicle as far as finger will reach, resting on the pleura. One removed from this region was darkly colored with lung pigment. All are infiltrated with marbled tuberculosis. Silk drain. Eighth day healed by first intention. In one instance the axilla was affected.

CASE IV.—Shamsa, male, aged twelve years; six months ill. A mass in the axilla, the size of a large orange, extending downward for three and one half inches and under the pectoralis major. At the lowest part is a discharging sinus communicating with a gland. The diseased skin was removed and some twenty-five glands excised. These varied in size from a large pea to an olive. Some showed specks of tubercular disease, others pea-like foci of caseation, or globules of matter. Some were mere shells, full of pus. The axillary vein was bared, but not injured. Recovery was not so rapid as in the neck, due to the movement of the part and the rigidity of the axillary fascia.

Tubercular glands may attain a great size. One in the left parotid region was the size of a hen's egg. In another case there was one of similar size under the mastoid attachment of the sterno-mastoid muscle. Others somewhat smaller are common.

CASE V.—Gor Dati, male, aged twenty-four years; two years ill. A large knot of enlarged glands filling right side of neck. Incision three and one-half inches long. Shelled out eleven glands, sizes from bantam's or pigeon's egg to bean. Silk drain. On fourth day a little tension from sanguino-serum. Twenty days in hospital. Cured.

The largest glands are found in the submaxillary and parotid regions. For a time, tubercular glands remain free of abnormal adhesions and quite mobile.

¹ See Case X.

CASE VI.—Nagree, female, aged fourteen years; three years ill. Numerous glands like small potatoes under lower jaw on left side, attached to each other but *movable*. With a two-inch incision they were easily shelled out. Wound healed on fourth day, except drainage-tube sinus. Cases VII. and VIII. were similar. Both healed by first intention. The latter, when seen two years subsequently, was quite free of the disease.

Extra-glandular changes. Adhesions occur in connection with acute suppuration of glands. They are formed when the capsule is involved in the inflammatory changes. Often they are to the skin; sometimes to deeper parts and not to the skin.

CASE IX.—Azi, female, aged twenty-five years. Mass of glands in left submaxillary and parotid regions. Skin movable over them, but they are not movable themselves. Curved incision from below parotid gland to facial artery. Flap turned up and soft adherent bags of pus dissected out with some difficulty. A gland of moderate size was left under the insertion of sterno-mastoid (this subsequently enlarged and was painful). The wound healed by first intention, except drainage-tube sinus.

The application of counter-irritants tends to favor adhesions to the skin. Glands on the surface or in the substance of the parotid are apt to become very adherent. Adhesions to the submaxillary salivary gland are common. Sometimes the salivary glands are enlarged. In glands which are actually under the sterno-mastoid, especially at the upper end, the adhesions are abundant and firm. Further down the neck they are less adherent to surrounding tissues, but are massed in groups of sometimes thirty or more. In these the glands are matted together. Occasionally they are adherent to the deep vessels of the neck.¹

CASE X.—Sat. Ram, male, aged sixteen years; six years ill. Mass of indurated adherent glands from right parotid to clavicle; imbedded in parotid, adherent to submaxillary salivary gland, resting on, and adherent to carotid sheath, passing back under sterno-mastoid to posterior triangle. Over the parotid they are firmly adherent to the skin, which is thin and reddened. Temperature 100°F. By two long incisions, one submaxillary and the other nearly the entire length of the sterno-mastoid, the whole of the glands were excised except some under the muscle. In order to get at these I was compelled to divide this and turn the ends up and down. It was subsequently sutured. Forty-six glands were removed, the largest mass was the size of a Malta orange. The day after operation the temperature was normal. The wound healed by first intention, except the thin patch of skin over the parotid. Twenty-nine days in hospital. For a few weeks a tiny salivary sinus existed over the angle of the jaw. This subsequently healed. For some months the boy remained in excellent health. There was no return of the disease. The following winter, however, he caught cold

¹ See Case III.

and died, I am informed, with symptoms of either acute catarrhal pneumonia or phthisis.

In CASE XI. there was a gland the size of a green walnut tucked under the jaw on the left side. The submaxillary gland was thinned and stretched out over this, being firmly adherent to it. There were also a few other small tubercular glands. Union by first intention. Patient nine days in hospital. In Case XII. there were two glands, one the size of a filbert adherent to the submaxillary, and the other tucked under the posterior border of the sterno-mastoid above. The operation took twenty minutes.

When one or more glands have supplicated, sinuses form, with surrounding inflammatory induration. Later on, often the skin becomes extensively undermined; and as a result of this, together with the pressure of swollen glands, the inflammatory exudation, and the irritation of the discharge, the skin over quite large areas is gradually eaten away. The patient's neck may then present a congeries of excavations, abscesses and caseating craters, with here and there a mass of fungating gland-tissue—a truly distressing condition!

Even here much relief can be afforded by surgery. The usual treatment is to scrape and eviscerate with Volkmann's spoon. This, however, is limited in its application, and, at the best, rarely effects more than an improvement.

CASE XIII.—Sabi, female, aged twenty-one years. Enlarged gland masses in submaxillary region with suppuration and induration. Two were incised and scraped on the left side and four on the right. Contents of two were soft, the others hard and fibrous. A good deal of induration remained. General improvement.

CASE XIV.—Yanni, female, aged forty years. Large softened glands on both sides of neck. Operation. Left side: opened a large suppurating cyst and scraped the interior. It communicated with another smaller one. Right side: several old scars. Great masses of inflamed adherent glands. Scraped out two large cavities, removing much gland material and pus. The wounds healed well, but a month subsequently other glands were found to be enlarged.

CASE XV.—Nadir, female, aged twenty years; six years ill. Five years ago one large submaxillary gland was removed. Now there is a mass of adherent glands stretching from the parotid down to below the omo-hyoid muscle. The skin was ulcerated and some of the glands discharging. On April 17, 1891, I scraped out the glands thoroughly as far as they could be reached. No improvement on May 16th. Glands enlarging and more painful. I now dissected out the whole. Some were under the sterno-mastoid, others resting on the carotid sheath. Digastric muscle and lingual artery exposed. By July 6, 1891, the wound was healed and the patient cured.

Another line of treatment is to combine excision and scraping. There is often no other choice for the surgeon. All that can be removed is excised. Where the glands are too soft, broken down and adherent withal, Volkmann's spoon is used. But the best course of all,

as far as final results are concerned, tedious though the operation may be, is undoubtedly to excise the whole.

CASE XVI.—Azmi, female, aged sixteen years. Advanced case. Ulceration under chin on right side with fungating gland masses. On left side in parotid region a mass the size of a green walnut adherent to the skin, which is undermined and indurated. The edges of all ulcers were trimmed with scissors. The glands on the right side were excised. They were adherent to the submaxillary. On the left side partial excision was performed, and the soft adherent glands which remained were scraped. The wounds healed slowly. The patient was fifty days in hospital. The final result was a great improvement of her condition.

CASE XVII.—Sundri, female, aged twenty-three years. One of the worst gland cases which I have seen. Lungs affected. Daily fever. Tendency to diarrhoea. On the left side were two egg-like masses, one submaxillary, the other under the sterno-mastoid. On excising these the internal jugular vein was exposed. On the right side the condition was very bad. Enormous enlargement under the jaw, under the sterno-mastoid, and anterior and posterior to it. Adherent masses of egg-like or large globular glands suppurating and caseous. There were three extensive ulcerations with sinuses. All free masses were excised. The sinuses and broken-down glands were scraped. Prolonged operation. The left side healed by first intention, the right side healed wonderfully well by granulation. This patient left the hospital on the twenty-fifth day cured, as far as the glands were concerned; but not so with the phthisis, of which she died some weeks subsequently.

Intra-glandular changes. After excising enlarged glands, the examination of those removed is always most interesting. In one case I failed to detect any sign of tubercular disease.

CASE XVIII.—Mahamdu, male, aged six years. Right side of neck enormously enlarged and consists of congeries of glands, varying in size from a small fowl's egg to a pea, all along the front of the carotid triangle under and behind the sterno-mastoid, and down to the clavicle. Prolonged operation. Eighty glands removed, of which fifty were larger than the nail of my little finger in circumference. On section these glands were firm and pale, and presented all the characters of lymphadenoma, but there were no other signs of Hodgkin's disease.

The following case is a good illustration of the morbid characters presented by an advanced tuberculous gland.

CASE XIX.—Khulsami, female, aged twenty-three years. Fairly movable tubercular gland, submaxillary, the size of a small fowl's egg. Excised. Healed on eleventh day. On section the gland showed, immediately under the capsule at various parts, four cavities—three containing soft, thick, curdled matter, and the other liquid pus. The healthy portions of gland tissue were dotted with small tubercular foci. Near the centre of the gland was a cream-colored focus about a quarter of an inch in diameter, not yet broken down.

Such a condition illustrates the futility (in advanced cases) of iodine applied externally, of small punctures, and even of incisions and limited scraping. In less advanced cases which have not gone on to suppuration, cream-colored specks or areas of tubercular infection are present. These are seldom isolated. If the gland be sliced up, several may be found. There are two seats of election. If the longest diameter of a gland be bisected, about the centre of each half a focus is frequently present. No scrofulous gland larger than a filbert is without one or more tubercular foci. Slightly enlarged glands in the vicinity usually show certain peculiarities. They are pale, less elastic, firmer, more brittle, and on section present a dull appearance with sometimes localized opacities. These morbid changes, together with the multiple nature of the lesion, mark off tubercular disease from ordinary inflammatory affections.

3. SYMPTOMS AND SIGNS.—Clinically, sometimes, where inflammatory enlargement occurs in a patient with a doubtful family history, uncertainty may exist.

CASE XX.—General H., aged fifty-two years, developed six weeks ago some enlarged glands under the anterior border of the sternomastoid. Three could be detected, the largest the size of a small olive. There was a history of enlarged glands in the family—one of his daughters had suffered from them. One exciting cause in his case was the strain of angling with a large heavy fishing rod. There was much pain, and at one time I feared that the glands might suppurate. Vigorous counter-irritation was applied with great benefit, and eventually they subsided and gave no more trouble.

The chief characteristics of scrofulous glands are numerical increase, and progressive enlargement in young adults. After a time, pain, tenderness, heat, fluctuation, and in advanced cases, redness, are developed. In young children, and especially in infants, with enlarged glands, it must be remembered that the probabilities are in favor of simple inflammatory enlargement. This is also true of elderly people. Again, where there is a distinct history of strain, in the absence of any phthisical or scrofulous tendency in the family, and even when this latter is present, the possibility of the enlargement being simple and not tubercular should be borne in mind.

CASE XXI.—Captain B., aged twenty-nine years, after severe climbing developed a knot of enlarged tender glands below Poupart's ligament. They continued to enlarge for a fortnight and were painful. Prolonged rest and elastic pressure were completely successful in curing the condition. This case brings out the fact that in simple inflammation, pain is an early symptom and may precede marked swelling. In tubercular glands often the exact opposite is the case.

4. TREATMENT.—Cases should be watched. Where there is any doubt as to the tubercular nature of the affection they should be

treated according to their chronicity or acuteness, on the lines already indicated in Cases XX. and XXI.

The great aim of all treatment should be to prevent extra-glandular changes. How can this be done? We must prevent suppuration of glands, prevent discharge of matter into subcutaneous tissue, or at the skin surface, and prevent the formation of adhesions. This can be achieved by early excision.

Again, if glands become disorganized they become a source of discomfort and danger, and this alone is a sufficient reason for their removal. Setons should never be used. Small punctures and incisions should be limited to those cases in which there are only one or two foci of suppuration and few glands enlarged. Volkmann's spoon has its place and may be used in the later stages, especially for isolated glands. But where the affection is at all general, these methods are thoroughly unsatisfactory. By them often only one or two glands are cured, while the others increase apace and final recourse to excision is necessitated. Excision, however, as I have already pointed out, is best performed at an earlier stage.

The following, selected from several, are examples of an ordinary and a severe case of glandular tuberculosis treated by excision before extra-glandular suppuration had occurred.

CASE XXII.—Tez. Mali, female, aged fourteen years, three months ill. Large masses of tubercular glands on both sides. On right, submaxillary only. On left, under and behind the sterno-mastoid and deep-seated. About fourteen masses removed. All were infiltrated with tubercle and some were distended with pus. Primary union. Patient dismissed on twenty-fourth day absolutely healed on both sides.

CASE XXIII.—Takari, female, aged sixteen years, five years ill. Glands have been rapidly increasing during the last four months. Both sides affected. On the right there were masses of glands like hen's eggs under the sterno-mastoid and in the submaxillary and carotid regions. Two incisions were made, one six inches in length, under the ramus of the jaw, the other from in front of the ear, down along the anterior border of the sterno-mastoid—a bridge of skin being left intact over the facial nerve. Altogether, thirty glands were removed. These were full of large tubercular patches and some were purulent. Long, tedious operation, as glands were adherent. Had to divide sterno-mastoid. Internal jugular vein accidentally wounded and had to be ligatured. The wound healed by primary union. Left side: This was operated upon fifteen days after the first. Immense masses under sterno-mastoid, also submaxillary. Two small glands in front of external auditory meatus. Posterior triangle full of enlarged gland masses. About forty removed; the largest the size of a green walnut. Tedious operation. Had to divide sterno-mastoid. Facial artery required ligaturing. Glands showed marbled appearance. Some caseous, others full of pus. Primary union. Left hospital the sixteenth day after the second operation, cured.

If the glands are large and numerous, the surgeon must make up his mind for an extensive operation. A free incision should be made under the ramus of the lower jaw or along the anterior border of the sterno-mastoid—sometimes both are required. The glands should be removed *with* their capsules. It is important to avoid rupturing them. If this should happen, the wound should be flushed. I always use an irrigator with weak "bichloride" lotion. The parotid and submaxillary gland should not be cut more than is absolutely necessary, for fear of salivary fistula. The submaxillary gland should not be dissected from its bed. Even extensive adhesions are no bar to success. In dealing with glands imbedded in the parotid, the facial nerve requires care. Where the glands are adherent to vessels, great caution is required especially with regard to the internal jugular vein, which is apt to be dragged out of position and unexpectedly wounded. Where the skin is ulcerated and adhesions extensive, start at a movable corner and at once work underneath. Very rarely use the spoon. Aim at primary union; in most cases it will be attained. No diseased glands should be left behind.¹ Rather than leave unremoved glands the sterno-mastoid should be divided. In the after-treatment, drainage-tubes should be discarded and strands of silk substituted. Even these should only be left in for one or two days. Firm and even bandaging is most important.

DISEASES OF THE SKIN ASSOCIATED WITH DERANGEMENTS OF THE NERVOUS SYSTEM.²

A CLINICAL STUDY.

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IN the life of the animal cell two essential factors are encountered upon which the well-being of the cell depends. The first is the presence of sufficient pabulum to maintain the various processes which constitute the phenomena of life. The second is that influence derived from the nerve-centers which regulates and gives character to these vital manifestations. A definite understanding as to the silent changes of the former, as well as the subtle impress of the latter, has for the most part evaded the most careful inquiry. Sufficient is known, however, to

¹ See Cases IX. and XIV.

² Read before the Dermatological Section of the Congress of American Physicians and Surgeons at Washington, D.C., September, 1891.

assist the clinician in his deductions as to cause and effect. In fact, is it not to clinical observation primarily, followed by histological research, that we are indebted for the solution of many problems that belong to the domain of physiology? In dermatology, has not clinical observation alone established the fact that when certain ingesta are withheld from the organism, well-defined cutaneous disturbances follow, as in scurvy? These questions and others are ably discussed in treatises on dermatology; but the second factor, or cutaneous aberrations of sensation and nutrition due to derangements of the nervous system, does not, it seems to me, claim the attention that its importance demands.

Destructive changes in the skin, following lesions of the nerve-trunk, are fairly common.¹ Starr has observed anomalies of sensation, the formation of bullæ and ulceration of the skin follow a destruction of the posterior columns of the cord.² Inflammation of the nerve itself or its ganglion has given rise to a vesicular eruption—as in herpes.³ Cutaneous diseases of reflex causation, due to a distinct focus of irritation, are neither unknown nor uncommon.⁴ Even emotional diseases of the skin have been recorded.⁵ Schwimmer collected numerous observations and adduced all the evidence that the status of physiology and pathology admitted to establish the neuroses of the skin as a distinct class.⁶ Since the publication of Schwimmer's monograph eight years ago, bacteriology has offered the most fertile field of research, to the apparent neglect of other lines of investigation.

It is thought, however, that the cases herein reported belong to this, as yet ill-defined, class of neuroses cutaneæ.

CASE I.—Miss R., aged thirty-nine years, an operator in a telephone exchange, presented herself on May 8, 1885, with an eruption on the face. There was nothing in the family history especially bearing on the case. Her general condition previous to the onset of the disease was as follows: For the most part she had enjoyed good health. About the age of twenty-five years several of her teeth became painful, and finally lost their normal sensibility and dropped out. She was told at the time that it was due to the death of the nerve. Since quite young she has been inconvenienced by errors of refraction until one eye has become practically useless. During the past six years she has had frequent attacks of neuralgia, usually on the right side of the face. Three years ago she underwent an operation for uterine polypi. Her duties have been arduous, not infrequently causing extreme exhaustion, and especially so when employed at night.

¹ "Nerve Injuries and their Peripheral Effect," London Lancet, May 13, 1887.

² THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, May, 1888.

³ "Diseases of the Skin of Reflex Causation," Med. and Surg. Reporter, June 13, 1885.

⁴ "Herpes: Its Etiology, etc.," THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, July, 1887.

⁵ Die neuropathischen Dermatosen, Vienna, 1883.

⁶ "Emotions Giving Rise to Skin Diseases," N. Y. Med. Record, April 2, 1887.

The eruption first made its appearance in 1881 on the face, in the form of reddish spots accompanied by burning and tingling rather than itching. They extended at the periphery until they attained a size varying from a split-pea to a dime. As a rule they were persistent, although they varied in severity from time to time, while a few have completely disappeared. At present (February 8, 1885) there are five spots on the face and one on the scalp, which vary in size from a split-pea to a silver dollar (Fig. 1). They are of a dull-red color, not perceptibly elevated

FIG. 1.



above the surrounding surface, and sparsely covered with closely adherent scales. The surface is dry, and there is no history of moisture. The disease is most marked on the right side of the face.

The diseases that came first to mind in making a diagnosis were: lupus erythematosus, tinea, syphilis, and possibly eczema and psoriasis. But the varying and comparatively evanescent character of the lesions militated against lupus, and the microscope enabled me to exclude tinea, while the course and history of the disease did not favor syphilis. Psoriasis it clearly was not, and eczema, too, was readily excluded. It was entered, however, as lupus erythematosus, and the usual treatment adopted.

After three months it remained in the same condition as when first seen.

From the fact that the patient's nervous system had become impaired, partly from the nature of her work, partly from causes unknown, and further, that the cutaneous lesions occupied the territory of frequent neurotic disturbances, as evidenced by pain, the disease was looked upon as one of possible neurotic origin.

In the way of treatment at this time she was advised to take a complete rest in the country, and was given a pill containing quinine, phosphorus, and nux vomica. Locally, the following:

R.—Menthol.	.	.	.	.	.	gr. xv.
Acidi carbolici	.	.	.	.	.	gtt. xv.
Zinci oxidi	.	.	.	.	.	ʒj.
Vaselini	.	.	.	.	ad	ʒj.—M.

Sig.—Apply.

At the end of a month she returned from the country improved in general health, the neuralgic attacks had given her little or no discomfort, and the eruption was decidedly better. She resumed work, and at the next menstrual period the neuralgia returned and the eruption was aggravated. During the eight months following the lesions extended even beyond their former dimensions, and several new ones appeared.

The treatment during this time was varied: galvanism, the iodide of potassium, and Hall's solution of strychnine were used in succession and gradually pushed to their full toleration without avail. Locally the treatment was equally varied and equally futile. The alcoholic preparation of tar known as liquor carbonis detergens and chrysarobin acted well for a time, but were both ineffectual.

On February 14, 1886, the patient was again advised to discontinue work, to use a bland local application, and to take the following:

R.—Arsenici bromidi	.	.	.	.	gr. ij.
Alcoholis	.	.	.	.	ʒiv.
Elix. simplicis	.	.	.	q. s.	ʒviiij.—M.

Sig.—ʒj three times a day.

For the neuralgic attacks the phosphate of soda, one drachm in a glass of water, was given.

On June 16th most of the lesions had disappeared, leaving whitish spots.

The case then passed out of sight until, at my request, she visited me on August 14, 1891. There were present a few small spots, unchanged in character and occupying the same positions. She said about a year ago it invaded the eyelids, but disappeared without leaving any visible signs of such invasion. She further said her sight was still defective, having failed to find relief although several times examined for glasses. She still had neuralgia, but it was not so closely confined to the right side of the face. She had also periodic attacks of megrim, preceding which the eruption was more sensitive and inflamed.

At my request her eyes were examined by Dr. B. L. Milliken, who kindly reported as follows: "O. D., V = 6/LX. O. S., V = 6/XVIII. Has worn glasses for near work off and on for fifteen years, especially lately with some benefit—a spherical glass in right eye, and a cylinder in left. As a child she had convergent strabismus, and was operated on at nineteen, since when she has had divergent strabismus. Testing without mydriasis: O. D. + 3.00 D. cyl. ax. 90°, V = 6/LX. O. S. —0.75 D. C + 2.25 D. cyl. ax. 135°, V = 6/IX. Examination with the ophthalmoscope shows the following: Right eye: Disc large, irregular in shape, with quite extensive choroidal changes about its border, especially downward and outward, with a broad crescent and high hypermetropic astigmatism. Left eye: Outline of disc obscure, with very extensive cho-

roidal changes about the disc, especially inward, where there is pigment absorption over an area several times the diameter of the disc, and less extensive downward and outward and in the macular region. High mixed astigmatism."

This report extends over a period of six and a half years. The case is still under observation.

CASE II.—Miss G., aged thirty years, a stenographer, sought advice for a disfiguring eruption on the face, August 12, 1889.

Her family history shows that her mother and several other members of the family belong to the class of hysteroneurotics. Previous to one year ago, when the eruption first appeared, her own health had been exceptionally good.

FIG. 2.



The disease made its appearance in the form of a reddish spot over the right malar bone. In the course of a few months similar spots came on the upper part of the cheeks and one on the bridge of the nose. Aside from the disfigurement, they gave rise to no special inconvenience. She was under the care of the family physician, who gave arsenic and a number of severe local applications without benefit, as the eruption steadily increased.

When the case first came under my observation the eruption had extended to the eyelids, as shown in Fig. 2. It was dry and covered

with a layer of branny scales, but not sufficient to obscure the reddish color beneath.

Although no definite diagnosis was made, it was regarded as a peculiar case of lupus erythematosus; at the same time it brought distinctly to mind the case preceding, to which it bore a striking resemblance.

The following treatment was adopted: The lesion (*a*) on one cheek was thoroughly scarified every four or five days, and emplastrum vego applied, as used by Vidal. On other parts mercurial ointment and the chlorohydrate of hydroxylamine (1 to 500 in alcohol) were applied. The lesion (*b*) on the upper lip was cauterized with the acid nitrate of mercury. But in spite of this varied treatment to different lesions they continued to spread.

It now seemed to me that the case presented features that are not usually encountered in lupus erythematosus, and she was again questioned as to a syphilitic history. Failing to get any confirmatory evidence, such a possibility was further tested by giving the iodide of potassium. She took eighteen grains daily for a fortnight, the eruption growing rapidly worse. Islets of the disease grew together until nearly the entire face was involved. There was much burning in the skin and watering of the eyes, with a metallic taste in the mouth. The drug was discontinued.

I had repeatedly observed that her nervous organization did not correspond in tone with her fine physical development. Expressions of sympathy excited uncontrollable fits of sobbing, which at times terminated abruptly in laughter. After close application during the day she became greatly fatigued, and instead of a desire to remain quiet at night she was annoyed with restlessness, "as if she must fly," using her own expression. It was further noted that during her menstrual periods the eruption was worse.

Inclining very strongly to the opinion that the disease was dependent on neurotic disturbances, rest was then advised, as it had been the only positive means of relief in the preceding case. The chloride of gold and sodium (gr. $\frac{1}{16}$) was given, and a 3 per cent. solution of resorcin used externally. During the first fortnight there was a slight improvement which soon became more pronounced, so that at the end of ten weeks the eruption had nearly disappeared, except on the eyelids and a small spot on the upper lip. She then resumed work, and the eruption remained *in statu quo* for a time, then grew steadily worse.

Although she had previously disclaimed any difficulty with her sight, she now said her eyes ached after prolonged exertion. She was referred to Dr. B. L. Milliken, who made the following report:

"The ophthalmoscope shows the fundus of each eye normal, except a hypermetropic astigmatism. Has vision + 0.50 D. cyl. ax. 90° on both eyes for nine months with some benefit. Under complete mydriasis the following correction of glasses was made: O. D. — 0.25 D. \bigcirc + 1.25 D. cyl. ax. 90°. O. S. + 0.50 D. \bigcirc + 0.75 D. cyl. ax. 90°. These have been worn since December 19, 1890, with some relief to the head and eye symptoms, so that she can use the eyes now indefinitely with comfort."

From the first correction there was some improvement in the condition of the skin, but the eruption still remained on the lids and a small area on the left side of the upper lip. After the second correction she not only found comfort, but was further rewarded by the gradual,

though steady, disappearance of the eruption, notwithstanding she had returned to work.

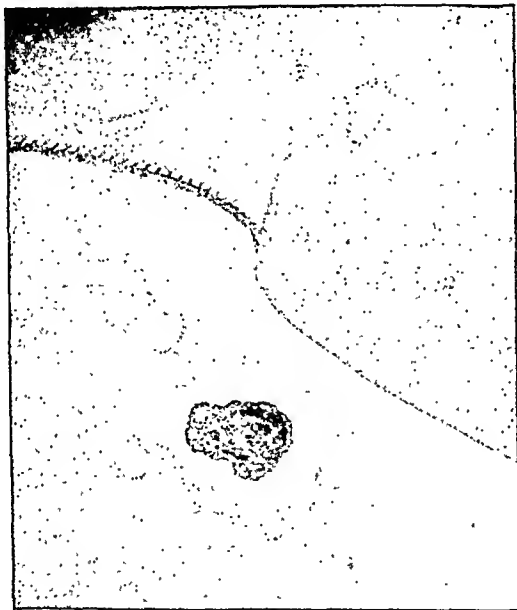
February 10, 1891. With the disappearance of the eruption, which has left but a trace at the margin of the left upper lid, a new feature has developed—viz., a loss of pigment in the parts formerly occupied by the eruption, with an increase of the same in the parts adjacent—a veritable vitiligo in appearance.

September 1. The patient returned from a vacation in good health; the eruption was just perceptible at the inner canthus of the left eye, and the disturbance of pigment almost hidden beneath the tan from the summer's exposure.

These observations extend over a period of two years.

CASE III.—Miss McC., aged forty years, was seen for the first time June 7, 1890. She complained of a discoloration of the skin and a painful sore on the right shoulder.

FIG. 3.



The family history shows that both on the maternal and paternal sides there is a tendency to phthisis. Her father suffered from boils when about forty-five years old, lasting five years. A few years after this he became hemiplegic, and died of apoplexy at the age of seventy-one. Her mother, aged sixty-five, is also hemiplegic.

Previous to the onset of the disease the patient was never robust, and at an early age encountered *une malheureuse affaire d'amour*, from which she never recovered—"Warped her whole life," as a member of the family expressed it.

The disease began six years ago, in the form of a painful, itchy sore on the right shoulder; a month, or thereabouts, later it broke out on the upper border of forehead—the *corona venalis*, so called—and finally it invaded the eyelids. In character they were the same, consisting of

superficial ulcers which discharged pus, were covered with crusts, which in turn were replaced by scales as resolution progressed.

For several years the lesions remained stationary, then gradually disappeared, and six months ago the face became entirely free.

When the case came under my care there was present a lesion about the size of a quarter of a dollar, covered with a thick adherent crust, over the upper border of the right scapula. There was no discharge, it was itchy and painful. This was the original site of the eruption, and surrounding were whitish spots of various sizes which indicated the position of former lesions. The most marked disturbance of pigmentation, however, was on the face, which looked like an ordinary case of vitiligo. Nor was the loss of pigment confined to the areas of former eruption, if we accept the statement of the patient, for it extended downward over the cheeks and sides of the neck. Like vitiligo, too, the surrounding skin was darker than normal.

The patient informed me that the most varied treatment had been used, and at the beginning everything seemed to benefit, but it soon relapsed into its former condition.

She was given $\frac{1}{10}$ grain doses of the chloride of gold and sodium four times daily. Locally, the following was used :

R.—Menthol.	}	āā	3ss.
Acidi carbolic			
Sodii benzoici			
Zinci oxidi . . . . .				3ij.
Ol. amygdalæ dul.			3ij.
Ung. simplicis			ad 3ij.—M.

Sig.—To be applied frequently.

Three weeks later—July 1st—the sore had not only given less annoyance, but it had decreased in size. She expressed herself as feeling better generally.

August 19. It was noticed that the eruption was worse during the menstrual period, which the patient said had been so from the beginning.

29th. The lesion had given little discomfort, otherwise there was no change. On account of a feeling of lassitude and loss of appetite, iron, strychnine, and arsenic were given in place of the chloride of gold and sodium.

Sept. 22. General condition improved, otherwise no change.

Bearing in mind the possibility of syphilitic infection where least suspected, and realizing that the local conditions present bore some very striking resemblances to this disease, it was thought best at this time to test the effect of mercury and the iodide of potassium. Five grains of the latter were given three times a day and the dose increased; and the oleate of mercury (20 per cent. 3j to 5j) used as an inunction.

Nov. 7. The iodine salt was poorly tolerated, and the eruption remained as before.

Dec. 9. It became evident that no benefit was to be derived from the iodide of potassium and mercury; it was therefore discontinued, and recourse had to the preparation of gold as at first.

Jan. 15, 1891. Patient fainted upon rising in the morning, with pain in the cardiac region, lasting about an hour. Heart's throbs muffled, otherwise no adventitious sounds. Of late she has complained of a weight,

which at times amounted to pain, in the upper dorsal region of the spine with tenderness on forcible percussion. In addition to the present treatment the upper part of the spine was blistered.

The case then passed out of sight, but her sister informed me (Sept. 7, 1891) that there was no perceptible change in her condition.

CASE IV.—A physician, aged thirty-eight years, has been under observation seven years with a peculiar recurrent eruption on various parts of the body.

The family history shows that he inherits both a neurotic and a rheumatic diathesis from both sides of the family. His father and mother suffered from sick headaches in their early days; his mother's people were sleep-walkers, as are two of the patient's sisters. His mother, when between thirty and forty years of age, had what was called salt rheum, mainly in the winter.

The patient became liable to attacks of megrim at the age of ten years. At the age of twelve years he had an eruption over the tendo Achillis, which looked like a ringworm. It disappeared in a fortnight, but the following winter it reappeared in the same place. An eruption next appeared, two or three years later, on the palms, in character similar to the preceding.

At the age of twenty-one years he had malarial fever; two years later the seventh nerve on the right side became paralyzed.

Of late years eruptions have appeared at irregular intervals on one of the arms. It has been noted that they are usually preceded by megrim, which latter, he has also observed, is brought on by mental fatigue.

In 1884 I saw him for the first time. He seemed to be in good general health. He had a slight degree of hypermetropic astigmatism of the left eye. My attention was especially called to a reddish spot which was just appearing on the anterior aspect of the right forearm, the size of half a dollar, accompanied by burning and itching. He informed me that for a week preceding he had felt completely worn out. The following day the lesion was perceptibly elevated above the surrounding skin, and in three days a bleb formed over the elevated area. This gradually subsided in about a fortnight, leaving a dark-brown scaly surface, which, in turn, slowly disappeared. Six months later, after a slight attack of megrim, a second outbreak was observed in the same place, but this time there was no exudation.

Since then I have seen several attacks. They have occurred on the arms and on the backs of the hands. They have usually followed megrim, although severe mental strain unaccompanied by the latter seemed to act as an exciting cause.

The eruptions of late have been first erythematous and very irritable, then scaly, and finally leaving a brown patch which disappeared in a few weeks. No special treatment has been employed.

In reviewing the histories of these cases, we have, it is true, nothing in the lesions themselves especially characteristic, nothing that does not occur in well-defined diseases; but we have, on the contrary, certain variations as to course and sequence, a careful study of which may enlighten some hitherto obscure problems in dermatology.

First, we have in each a strong predisposition to various neuroses.

Second, we have, in addition, various depressing influences, mental fatigue, and in Cases I. and II. the indirect irritation from defective sight; the latter, as is well known, is capable of producing an hyperæsthetic state in the important ganglionic centres at the base of the brain. Nor was it, in Case I., until the eye-strain had been fully relieved that the eruption subsided. In Cases I. and II. rest accomplished the same result.

Case III., it appears to me, differed only in severity. There was not only a more direct inherited predisposition to degenerative changes in the nerve structures, but in other tissues as well. There had occurred to her a circumstance more blighting to the essential processes of life than prolonged labor or local strain. Her very expression was indicative of pain; and the tenderness over the cord would lead one to infer that if there were central nervous changes they were graver and more widespread than in Cases I. and II. In them the central disturbances could have been but slight, as they regained their normal tone by mental quietude and the cessation of ocular strain.

Case IV. differed not only in the character of the eruption, but in that the cutaneous lesions were essentially periodical; and dependent upon a definite prodromic disturbance in the nerve centres. He had, too, a strong inherited predisposition to periodic outbreaks of various nervous phenomena, and while the cutaneous lesions differed in course and appearance, yet they bore no less plainly the stamp of their neurotic origin.

I believe, then, that we are warranted in regarding these eruptions as the outward manifestations arising from a pathological condition of the trophic centres.

First. Because in each we have sufficient evidence of such disturbances.

Second. Because vasomotor and trophic changes in the skin frequently accompany certain destructive processes in the cerebro-spinal tract. Thus, in syringomyelia, a disease brought to light by modern research, there is a destruction of the posterior columns of the cord; as a result, there are marked trophic and vasomotor changes in the parts over which these centres preside.

Third. Because measures alone which tended to mitigate these central disturbances, also improved the cutaneous lesions.

But the nature and extent of these supposed central changes still remain for the histologist to determine.

GANGLION AND TENO-VAGINITIS TUBERCULOSA.

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I. GANGLION.

GANGLIA (from γαγγλίων, a hard swelling), occupying the exposed and prominent position they do, must have been recognized by the earliest practitioners of medicine. The most commonly accepted explanation of their origin dates back about one hundred and fifty years (1746). Though they have been so long, and, one may say, so well known, there still remains at this day, if not in the very newest text-books, certainly in the minds of medical men, much confusion and difference of opinion not only as to their origin, but also as to what we are to understand by the term ganglion.

Probably the most potent cause leading to the difference of opinion as to the nature and origin of ganglia has been the very loose way in which the term has been applied; thus almost any tumor arising in the vicinity of joints and tendons has been called a ganglion, no distinction being made between true ganglion, hygroma, bursal enlargements, and hydrops of the tendon-sheath. To this cause must be added another: an ignorance of the anatomy and pathology of the various affections.

The term ganglion, according to the best authorities of the present day ought to be limited to those small tumors, rarely larger than an almond, which occur in the neighborhood of joints and tendons, most commonly on the hand and foot, and which possess a peculiar, thick, strained-honey-like, or colloid contents.

This fluid is to be regarded as being as characteristic of ganglion as are the contents of a sebaceous or dermoid cyst for them. It is the *sine quâ non* of ganglion, and in this article the term will be used with that limitation, yet even Bardeleben¹ considers hygroma and ganglion as about the same. For a consideration of the older theories, reference may be made to Hoeftman's work.²

Ganglia, as is well known, occur most frequently on the hands and feet, about the knees or elbows. They are much the most common on the hand, and here the places of predilection are the radial sides, dorsal

¹ Lehrb. d. Chirurg. und Operat., 1880, ii. 885.

² Ueber Ganglion u. chronisch-fungöse Sehnenscheiden-entzündung (Hygroma proliferum, Virchow). Königsberg, 1876.

and palmar, of the wrist. They also occur on the fingers, and even in the palm of the hand. On the foot they are almost invariably on the dorsal surface in close proximity to the tendon of the extensor proprius hallucis. That ganglia do occur in the region of the knee, usually associated with the hamstring tendons, cannot be denied, but they are rare, probably rarer than is usually supposed. Still rarer are those about the elbow.

As has been said, only such tumors as possess the peculiar colloid material will be considered as ganglia. This then enables us to exclude (1) All affections of the bursæ, for they never possess this fluid; their cystic tumors are simple hygromata (Falkson¹). (2) Herniæ of the joint synovia as described in the thorough investigations of Wenzel Gruber.² (3) Hygroma proliferum (Virchow) and all other forms of tuberculosis of the tendon-sheaths. (4) Hydrops of the tendon-sheaths. (5) Other tumors arising from or in the neighborhood of the joints or tendon-sheaths; such as lipoma, fibroma, fibro-enchondroma, echinococcus cysts and gummata.

Ganglia, with the limitation of the term already made, occur in order of frequency as given above, and possess certain well-marked characteristics. They rarely exceed in size that of an English walnut, and are generally much smaller. They are far from uncommon, and occur more frequently in the female than in the male sex.

Vocation has long been supposed to play an important rôle in their production, musicians being the most liable. As to age, though not unknown in childhood and old age, they are most common in early adolescence.

As active causes in their production, rheumatism, gout, scrofula, forced exercise, trauma, have all been and still are advocated. That they are wholly without influence would be hard to prove, though it is improbable, since from the anatomy of these tumors they must be of very slow growth, that the blow, rheumatism, etc., does more than call attention to the part, and the little lump is discovered.

The function of the hand is generally but little affected; at times, however, and especially in cases where the ganglion has been repeatedly ruptured, there is a sense of weakness, which most commonly affects the whole hand, and also some pain on motion. At other times, especially in hysterical patients, the functional disturbance may be great.

The tumor is covered by healthy skin to which no attachment takes place except in those cases, which might almost be said not to occur, where ulceration and suppuration of the ganglion occur. Movement of the fingers causes, at times, some motion on the part of the tumor.

¹ Archiv. f. klin. Chirurg., xxxii. 74.

² Archiv. path. Anat., lxxv. 236; lxxviii. 83; xcix. 489.

The size varies, but the variation is within comparatively narrow limits; the smallest, occurring usually on the fingers, are about the size of a pea, the largest on the hand or wrist, rarely the size of a small egg, while the most commonly met with size is that of an almond. This is, of course, the apparent size as made out by palpation, for the real, as shown in dissecting out the tumor, always exceeds the apparent size. The form is generally spheroidal, now and then irregular like a tomato; this depends upon constrictions of the tumor by bands of fibrous tissue, or upon the formation of pockets, or of daughter cysts (Falkson¹). The consistency, like that of a sebaceous cyst, varies from exquisitely fluctuating to as hard as bone, hence the German appellation "Ueberbein," this difference being due not to any variation in the consistency of the contents but to the tension of the same. The contents are invariably the already mentioned transparent colloid material, at times stained red from hemorrhage, due to attempts at bursting, but usually of a straw-yellow color. On dissecting out such a cyst, a true ganglion, it is found to consist of an outer fibrinous and an inner endothelial layer, this latter said often to be incomplete. The cyst wall, in general, is quite tough.

Though opinion differs as to the limitation of the term ganglion, there is a still larger number of the theories as to the mode of origin of the same. The time-honored and much copied opinion that they are due to hernial poachings of the joint or tendon-sheath synovia seems to have originated from Eller,² as far back as 1746.

Aston Key³ believed their origin to be independent of the bursæ. "It would seem that ganglia are not merely diseased bursæ mucosæ, for the former are found in parts where, in a state of health, the latter do not exist. I look upon them as new structures formed upon tendons as pressure, or friction, or undue exercise may call them forth."

Velpeau⁴ considered ganglia to be of two kinds; those developing from tendons and those due to a hernia of the joint mucosa. The first kind are not dangerous to operate upon, the second quite so.

Jules Cloquet,⁵ who makes no distinction between ganglia and hygroma tendinum, regards them as "véritables hydropsies des membranes synoviales non-articulaires."

Billroth⁶ adopted Eller's view and speaks of their origin from tendon sheaths or joints. He, however, leaves the question of isolated cysts, ganglia, open. Hueter⁷ advocates the belief that ganglia arise both from

¹ Archiv. f. klin. Chir., 1885, xxxii. 58.

² "Exposition Anat. de l'Origine et de la Formation du Ganglion." Histoire de l'Acad. Roy. des Sciences, 1746.

³ Guy's Hosp. Reports, 1836, i. 415.

⁵ Archiv gén. d. Med., 1824, ii. 232.

⁷ Grundriss d. Chir. 1880, i. 127.

⁴ Arch. gén. d. Med., 1826, ii. 507.

⁶ Allg. chir. Path. u. Ther. 1882, 689.

tendon-sheaths and from joints, but, in general, adopts the view of Gosselin,¹ who refers a part of the ganglia to the normally existing synovial follicles (*follicules synovipaires*, Gosselin), which he found as small pouch-like ectases, crypts, or glands in synovial bursæ and in joints.

Later, Michon² found the same structure in tendon-sheaths, and Volkmann³ proved by injection experiments that they exist in the hand, foot, knee, and elbow joints, and thinks that they, like a sebaceous gland, on becoming stopped produce the ganglia as retention-cysts.

Paul Voget⁴ recognizes the following varieties: (1) Those arising from the tendons; which are (*a*) hernial protrusions at preformed or acquired openings, or (*b*) retention-cysts of the synovial crypts, or (*c*) teno-vaginal hygromata. (2) Those arising from the joints; these have their origin most commonly in the follicles synovipaires of Gosselin. (3) The bursal ganglia.

Virchow⁵ draws no sharp line between hygroma or ganglion, and would refer the formation of both to about the same process, namely, a filling with fluid and a coalescence of certain intercellular spaces. But as bursæ are not ganglia and do not become ganglia, and as ganglia occur where bursæ do not normally exist and where they are hardly known to occur, Virchow's view of their origin must seem very improbable.

Thus Volkmann (*loc. cit.*) in speaking of ganglia and bursæ, says they are two entirely different things: "Ein Hygrom eines eigentlichen Schleimbeutels oder aber einer Sehnenscheide und ein ausgesprochenes Ganglion sind zwei ganz differente Dinge," and Meckel,⁶ as cited by Hoeftman, says one must bear in mind that hygroma of the tendon-sheath is to be distinguished from ganglion, *which has nothing to do with the sheaths of tendons*, and only on the authority of certain irresponsible surgeons is still often considered as an enlargement of the tendon-sheath. Meckel believes that the ganglia originate in the synovial follicles of Gosselin and in the sub-synovial bodies of Henle.

Besides these we have the opinion of Teichmann and Knorr that ganglia are neoplasmata, colloid cysts, and have nothing in common with the tendon sheaths.

There remains only the hypothesis of Hoeftman, that ganglia are synovial dermoids. A consideration of these theories, as to which merits

¹ "Recherches sur les Kystes synoviaux de la Main et du Poignet," Bull. de l'Acad. de Med., sér. xvi., No. 7.

² Thèse pour l'agrégation.

³ "Krankh. d. Beweg.-organe," Pitha-Bilroth Chir.

⁴ Die chir. Krankh. d. Oberen Extremität, Stuttgart, 1881; also, Deutsche Chirurgie, Lief. 64.

⁵ Die Krankh. Geschwülste, Bd. i. 200.

⁶ Mikrogeol., Th. Billroth, Berlin, 1856.

especial approval, will be preceded by a short review of the reported cases of dissection of ganglia, either upon the cadaver or during a bloodless operation upon an anæsthetized patient.

Cases. Pauly¹ reports the removal of a small ganglion from the back of the wrist, using the Esmarch bandage and local anæsthesia by means of the Richardson spray. He says a communication with the tendon-sheath could be seen.

Thomas P. Pick,² a post-mortem dissection—death having been due to pyæmia. The ganglion, which was the size of a bean and lay under the radial artery, was dissected loose from its surroundings, opened, and was seen to connect with the wrist-joint between the radius and scaphoid bones. Another and larger ganglion on the back of the wrist had no connection with the joint.

Rochelt³ reports two operations. In the first, on the back of the hand, no mention is made of any communication with the joint or tendon-sheath, but the operation was incomplete—that is, only a part, the larger part, of the sac was removed. In the second case, also on the back of the hand, the ganglion was exposed, and was connected to (he does not say that their cavities communicated) a tendon-sheath by a narrow pedicle.

Chopart⁴ reports a post-mortem dissection of a ganglion which was in intimate connection with the radial artery for some seven centimetres, and says the ganglion did not communicate with the joint.

Tuffier⁵ reports a careful post-mortem dissection of a ganglion lying on the anterior palmar surface of the head of the radius and in close connection with the radial artery. He was unable to make out any communication between the joint and cyst cavities.

Falkson (*loc. cit.*) reports thirteen operations, of which two were by Schönborn and eleven by himself, in all of which the Esmarch bandage was used, and a careful dissection, layer by layer, was made. Of these, ten were in the female and three in the male sex.

In three of these case the ganglion was situated in the region of the radial pulse, and in all three the tumor extended down to the joint capsule between the tendons of the supinator longus and flexor carpi radialis. The artery ran either upon or alongside of the tumor. On the back of the hand all but one of the ten cases occupied the same anatomical position, that is near the proximal extremity of the metacarpal bone of the index finger, and all descended to the joint capsule in the same interspace, between the tendons of the extensor indicis proprius

¹ "Zur Therapie d. Handganglien," Berl. klin. Wochschr., 1878, 514.

² "Ganglion under the Radial Artery communicating with the Wrist-joint," Trans. Path. Soc., London, 1867, xviii. 274.

³ Wien. med. Presse, 1879, xx. 1032.

⁴ Prog. Med., Paris, 1885, 2d ser. ii. 556.

⁵ Prog. Med., 1886, 2d sér. iv. 1038.

and extensor carpi radialis breviar. This space may be easily seen on thin hands by giving them a moderate degree of flexion and some abduction, hence by the same position a tumor occupying this space is made more visible.

In the other case the cyst also descended to the joint, but between the tendons of the extensor carpi radialis breviar and the extensor longus pollicis. In all thirteen cases the tumor reached down to the joint capsule. Falkson calls attention to the fact that if one divides the hand and wrist anteriorly and posteriorly into ulnar and radial halves, then almost without exception the ganglia occur on the radial half, the great majority on the dorsal, the minority on the volar surface.

Of the thirteen cases, in seven the tumor was pedunculated and in six sessile. In the majority of the cases the cyst was intimately attached to the sheaths of several tendons, and in not a few one or more sheaths were opened during the operation; at other times, by a careful dissection, their separation could be effected without opening a single sheath. In all the cases the cyst was attached to several tendon-sheaths, but in no cases could any communication between the cyst and sheath cavities be made out.

In eleven cases there was certainly no communication with the joint, in the other two cases the pedicle was ligated, hence the question cannot be definitely decided, though Falkson inclines to the belief that they did not connect with the joint, because the pedicles were apparently solid.

To these may be added the following case, which I operated upon at the German Protestant Hospital, Cincinnati, Ohio, September 16, 1890, Drs. Gustav Zinke and Leonard Freeman assisting.

Miss L. B., aged twenty-five years. Ganglion on the dorsal surface of the right wrist near the proximal end of second metacarpal bone; had existed several years, and at one time had burst spontaneously, but reappeared after a short time. It had been treated by masage, painting with iodine tincture, etc., and also even with moxæ, the scars of which were scattered over the hand, wrist, and forearm. Patient is a pianist, and ascribes a certain weakness of the index finger and also pain in the thumb and up the arm as far as the shoulder, to the presence of the tumor. She came with the diagnosis of a bony growth; the tumor, however, over which the skin was normal and not adherent, fluctuated distinctly. Chloroform, Esmarch bandage. An incision in the direction of the tendons through the skin and subcutaneous fat exposed the dorsal ligament of the wrist under which the tumor lay. The sac wall was attached to the tendon-sheaths of extensor longus pollicis, extensor carpi radialis breviar, and extensor proprius indicis, and passed down between the tendons of the extensor carpi radialis breviar and the extensor proprius indicis to the capsule of the wrist joint, where it had a sessile attachment.

Although the tendon-sheaths were opened, there existed no communication between the same and the cavity of the cyst, nor could any such

connection with the joint be made out. Catgut sutures, no drainage, union *per primam*, the first bandage being changed on the eighth day after the operation. Result: Finger and thumb motion normal, that of the thumb strong and free, some slight pain on flexion of the wrist. The pains in the arm, elbow, and shoulder recurred after two weeks, but were relieved by salol and phenacetin, *aa gr. ijss, t. i. d.*

Hoefstman (*loc. cit.*) collected nine cases of ganglia of the hand, they were reported by Eller,¹ Gosselin,² Knorr, Teichmann, Foucher,³ and Verneuil.⁴ The case reported by Eller may be disregarded, as the cyst was filled with serous fluid. Six of the eight remaining cases were ganglia of the back of the hand, all of which extended down to the wrist-joint capsule; some were pedunculated, others sessile, but none communicated with the joint cavity. The other two of the eight cases, after excluding Eller's, were those reported by Foucher and Verneuil. There were eleven ganglia in the two cases; they were small tumors with the characteristics of ganglia, situated upon the phalanges; none of them communicated with the synovial sheaths or joints. Verneuil (*loc. cit.*) also reports as occurring in one of the cases a tumor situated in the region of the articulation of the first metacarpal with the trapezoid (*os multangulum majus*), which had a perceptible communication with the joint. Its contents, however, were not transparent, but had a violet color, so that some doubt must exist as to the tumor having been a true ganglion.

Falkson (*loc. cit.* p. 80) reports two cases of ganglia of the fingers. In one case the tumor was in the first phalanx of the index finger; in the other case on the first phalanx of the ring finger. The tumors were about the size of a pea and on extirpation were found to be typical ganglia with no communication with the tendon-sheaths or with the joint—thus apparently, as Falkson thought, free cysts.

ORIGIN.—As to the origin of ganglia, one must believe that such typical tumors have a certain and constant mode of development; and yet the theories relating to this very point are far from few in number. We will consider first the older and most commonly accepted view, that they are hernial pouchings of the tendon-sheaths or of the synovial membrane of the joints.

This theory must necessarily presuppose an abnormal filling of the tendon-sheath (an occurrence with which the clinical history rarely, if ever, corresponds), and we ought, therefore, to find the ganglia developing most commonly at that part of the sheath which under pressure is most disposed to sacculation. Now, injection experiments prove that the ends of the sheath-sac are the first to become sacculated (Volkmann), but, unfortunately, ganglia connected with this part of the sheath are

¹ Acta Acad. Berolini, T. ii. 1746.

³ Gaz. Hebdom., 1885, ii. 15.

² Michon: Obs., 39.

⁴ Michon: Obs., 40.

rare. Even those ganglia which are supposed by the patients to have occurred suddenly, would, of necessity, if due to increased internal pressure, be filled with the same character of fluid as that which is supposed to fill the sheath; for, according to the theory, the ganglia is but a hernia filled with the same fluid as filled the sac from which the hernia took place, the change in the consistency of the fluid being supposed to depend upon a thickening of the same from absorption of some of its water. Now, these same ganglia which are supposed to have appeared suddenly, are rarely situated at the ends of the sheath-sac, can usually be burst, and if not burst their contents cannot be pressed back into the sheath. They are usually supposed to be due to a blow or strain, and the history of a dropsy of the tendon-sheath is rarely or never met with in connection with them. That the fluid filling them has the same physical character as that of a common true ganglion we have every reason to believe, for they have never been shown to contain anything else. Furthermore, though dropsy of the tendon-sheaths is known, many cases are really tubercular (Koenig¹). It is not known that in the absorption of the dropsical fluid, a substance similar to that found in ganglia is produced. Another point against the hernial origin of these tumors is the fact that they can be burst. The opening into the sac must be very small, and the fluid have undergone the thickening process very rapidly, which is not the experience of Gruber (*loc. cit.*) in what might be called "hernial bursæ."

That the ganglia have a certain relation to the joint-capsule and to the tendon-sheaths, seems to have been questioned but by few; that they are almost invariably intimately attached to both the joint-capsule and one, usually more, tendon-sheaths, is an anatomical fact; and, further, that a true inter-communication between the two cavities is quite, if not exceedingly, rare, careful dissections go to show.

The ganglia at the wrist are, probably with few exception, attached to several tendon-sheaths, but quite frequently can, by careful dissection, be separated from the same without opening either cavity. They further, as Falkson remarks, dip down to be attached to the joint-capsule, which one would hardly expect them to do, did they spring from a tendon-sheath, for tumors tend in their growth toward the skin surface, and not toward the deeper tissues; whereas, did they arise from the joint-capsule, a secondary attachment to several tendon-sheaths might be expected.

Hueter and Vogt believe that they originate almost invariably from the tendon-sheaths. Volkmann, Koenig, Falkson, Meckel, and Gosselin believe that their origin is as invariably from the joints. Meckel says, "They have, indeed, nothing to do with the tendon-sheaths."

¹ Lehrb. d. Chir., 1886. iii.

The bursal herniæ of the joints so admirably described by Gruber (*loc. cit.*) are, according to him, not ganglia, but bursal hygromata, and there can be no doubt that bursæ do not produce ganglia, but hygromata; thus the combination of terms "bursal ganglion" is contradictory. For the same reason we may disregard the theory of Virchow and Volkmann (*loc. cit.*) of the development of ganglia from small intercellular spaces, for it is exactly in this manner that they explain the formation of adventitious bursæ.

There still remain for consideration three theories, and it is especially to the first two that later writers are turning more and more.

The first two may well be considered together. They are: (1) Ganglia develop from the follicules synovipaires of Gosselin, as retention-cysts, or (2) to the sub-synovial bodies described by Henle, Gosselin, and Teichmann. To these sub-synovial bodies of Henle, as already mentioned, Hœftman looks for the germ of his "synovial dermoid." It must, however, be remembered that both of these theories are hypotheses only; there has as yet been no proof that ganglia occur from either source; but, on the other hand, they are based upon certain anatomical facts, and we know that other structures somewhat similar in character do produce cysts, and we also know that, as a broad and general rule, cysts are developed from glands.

Now, the synovial follicles of Gosselin and the sub-synovial bodies of Henle have been found both in the joint-capsules and in the tendon-sheaths. Therefore, if the hypothesis is correct that ganglia owe their origin to certain changes in these structures, then there is no reason to suppose that they may not develop from either joint-capsule or tendon-sheath; that they might develop more frequently from one than from the other goes without saying.

As to the other view, the third of the remaining theories, that the ganglia are neoplasmata (Teichmann and Knorr), colloid cysts, which have absolutely nothing in common with the tendon-sheaths or joint-capsules, one can only say that it can be easily refuted if we admit that there is, even though it be rarely, a communication between the tendon-sheath or joint-cavity and that of the ganglion. If this communication is absolutely denied, and the literature would hardly warrant it, then the refutation of the theory would be impossible with our present knowledge of the developmental origin of these tumors. Ganglia certainly do not, as a rule, communicate with the neighboring synovial cavities; the reported cases of careful dissection prove this statement, and certain other considerations make it probable that a communication, if such exists, must be very rare; thus, long-continued pressure will not empty the cysts, and suddenly applied force causes them, when their walls are not too tough, to burst. According to the laws of physics for the diffusion of fluids, a communication, be it ever so small, would seem

well-nigh impossible, and still have the fluids, one thick and the other thin, retain these characteristics; besides, the specific contents of a ganglion have never been found in a tendon-sheath. Another argument in favor of no communication is that of the older methods of treatment which cured by causing suppuration of the sac; they cured, and that, too, without, in the vast majority of the cases, causing suppurative inflammation of the joints or tendon-sheaths, and the opening must, indeed, be small which will not let the staphylococci pass.

The idea, which I am led to believe exists quite commonly amongst physicians, that ganglia generally do communicate with a tendon-sheath or a joint, more especially the former, may not improbably have had its origin in the confusion which did and still does to some extent exist, as to the difference, if any, between a ganglion and a hygroma of the tendon-sheaths.

TREATMENT.—The most universally and frequently used, if not, indeed, the oldest method of treatment of true ganglion is the mechanical bursting of the same, a procedure which is rendered possible by the resisting character of the structure, bone, on which they lie; by the tension of the contained fluid, and, also, by the sac being practically always a closed one. The way in which this simple operation is performed is so familiar as scarcely to justify description; suffice it to say, sudden pressure with the thumb, or a sharp and well-directed blow with the back of a book, especially the latter means, seem to have been the most favorite methods. The after-treatment consists of a pad so held in place by bandage or by adhesive plaster as to make pressure on the collapsed cyst, with now and then, for some days following, massage of the region to empty the sac of what fluid may have re-collected.

Critically considered, this method has certain very decided advantages; its simplicity, the small amount of danger, and the rapid, and, to the patient, almost startling result. Its disadvantages, however, must not be lost sight of entirely. As to danger, it is the remote one of causing fracture; as to curative effects, the method has been shown to be only palliative. The ganglia so treated always return after the lapse of some time, weeks or months; the pain is not inconsiderable, and the shock to a child or young girl, in whom they are more common than in men, may be great. Another, and no small disadvantage, is that at times, even though the blow or sudden pressure be well directed, it is impossible to burst the tumor. From a purely scientific point of view, the method is unsurgical, and would never lead to a clear comprehension of the nature and origin of true ganglia. Yet, such are its advantages that in all probability it will continue to be the most frequently adopted means of relieving patients of what, in general, causes them but little inconvenience, and from which they most frequently seek relief for purely cos-

metic reasons. As adverse to this method may be cited the authorities given in the footnote.¹ In its favor are those cited also below.²

Older, perhaps, than the rupturing of these small cysts is the external application of stimulating ointments, blisters, painting with iodine, moxas, mercurials. These may all be discarded as totally unable to perform the work proposed, though, of course, not as Jules Cloquet, in 1824, thought, because we are afraid of changing the tumor into one of the fungous variety.³

The use of the seton was at one time quite a common form of treatment, great stress being laid upon the number of silk threads to be used, and when the first half of them should be removed, or whether they should not all of them remain in the skin until free suppuration was established. That the use of a seton passed through the tumor would cause the cure of the same by suppuration cannot be doubted, but to-day, when pus has fallen from grace, and the use of the seton is well-nigh extinct, we shudder at the idea, and not without cause; not that we so dread the mere presence of pus, but we know the danger of wound infection, of the seton-needle wounding a tendon-sheath, or the possibility of a connection with the joint or tendon-sheath, though we are not, as was Jules Cloquet, afraid of causing a cancer. That disastrous inflammations did at times attend this form of treatment there can be no doubt, but the rarity of the occurrence must have an effect upon our opinion as to whether or not ganglia often stand in direct communication with one of the neighboring synovial cavities.⁴

Long-continued pressure, compression, was also a means of treatment, the efficiency of which seems extremely doubtful. Injections of tincture of iodine, chloride of zinc solution, etc., were also practised and cures reported, but with no very warm advocacy. Puncture and incision were practised by some, the sac being emptied through the puncture or incised wound, pressure applied, and the wound left to heal by first intention, if it would. The method, except when free suppuration of the sac followed, could only produce palliative results.⁵

¹ Aston Key: *Guy's Hosp. Rep.*, 1836, i. 415. Roys Bell, Gay, Berkeley Hill, Spence: *Brit. Med. Journ.*, 1871, ii., pp. 9, 36, etc. Skey: *Lancet*, London, 1870, ii. 285.

² Savory: *St. Barth. Hosp. Rep.*, ii. 79. Thomas Smith: *Brit. Med. Journ.*, 1871, ii. 9, 36, etc. Willet, Poland, Lawson, Rouse, Gascoyne, Bellamy, Holthause, Mason, W. Adams, Vincent, Gillespie, Joseph Bell, and Sir H. Thompson: *ibid.* Koenig: *Lehrb. d. Chir.*, 1886, iii. Cloquet: *Arch. Gén. d. Méd.*, 1824, iv. 232.

³ J. Brown: *Brit. Med. Journ.*, 1877, i. 545. Jules Cloquet, *loc. cit.* Sir H. Thompson, Poland, Howse, LeGros Clark, George Lawson, Gascoyne: *Brit. Med. Journ.*, 1871, ii. 9, 36. Woodham: *Edinb. Med. and Surg. Journ.*, 1810, vi. 157.

⁴ Cloquet, *loc. cit.*, Henry Smith, Brown, Sir H. Thompson, Poland, Holthause, W. Adams, Berkeley Hill: *Brit. Med. Journ.*, 1871, ii. 36, etc.

⁵ Brown, Poland, Davy, Spence: *Brit. Med. Journ.*, 1871, ii. 9, 36, etc. Skey: *Lancet*, London, 1870, ii. 285. Vojtits: *Wien. med. Presse*, 1866, 940.

Subcutaneous puncture or discission has, ever since the introduction of this procedure, been a favorite method of dealing with these cysts. It must, however, along with the forcible rupture, be considered as, and only as, a palliative means. The ganglia so treated are sure to return; but as a palliative method it is certainly worthy of consideration; it is much less brusque than the rupturing by a blow, is just as sure, and its dangers are exceedingly small, especially if, as should be insisted upon to-day, thorough antiseptic precautions are taken. So performed, and with the use of a sterilized solution of cocaine, the operation would be almost without danger and painless. Thus, as a palliative method, it should be ranked alongside of rupturing. The presence of danger, of another character from that of suppuration, in those ganglia which lie on the palmar surface of the wrist, must not be overlooked. These ganglia are most frequently associated with the radial artery either lying beneath or alongside of the same; subcutaneous puncture of this variety might very easily lead to a wound of the artery, and the formation of a traumatic aneurism. One must feel some doubt, bearing in mind the anatomy, as to the statement of John Wood, of King's College, London,¹ "That the needle is to be used pretty freely in dividing the cyst wall at its opening of communication with the sheath of the tendon."²

Electrolysis of these tumors seems to have been but little used, and yet they are very conveniently situated and well adapted to this method of treatment. That it has been practised, and that, too, as long ago as 1871, when electrolysis was comparatively little used, the two cases reported by Wahluck³ go to show. Whether a cure accomplished by this method so completely disorganizes the cyst wall as to prevent a recurrence, must remain an open question until more data can be obtained from which to draw conclusions.

Extirpation as a method for the cure of these tumors has of late years grown much in favor; not simply because we now know that the great majority of the cysts have no direct communication with the joint or tendon-sheath cavities, but because by virtue of the protection given by the so-called antiseptic or aseptic method of operating, it is a matter

¹ Brit. Med. Journ., 1871, ii. 9.

² Brown: Brit. Med. Journ., 1877, i. 545. Gross: Phila. Med. Times, 1870, i. 298. Cummin: Edinb. Med. and Surg. Journ., 1825, xxiv. 95. Aston Key: Guy's Hosp. Rep. 1886, i. 415. Wood, Rogers, Bell, Heath, Savory, Smith, Howse, LeGros Clark, DeMorgan, Unun, Lees, Rouse, Rivington, Gaseoyne, Hancock, Bellamy, Holthause, Mason, Davy, W. Adams, Shillitoe, Berkeley Hill, Spence: Brit. Med. Journ., 1871, ii. 9, 36, etc. Stokes: Dublin Quar. Journ. Med. Sciences, 1870, xlix. 124. Steele: St. Louis Med. and Surg. Journ., 1871, 430. Vojtits, Wien. med. Presse, 1866, 940; Edward C. Thompson: Med. Press and Circ., London, 1877, n. s. xxiii. 380. Koenig, Hueter, Volkmann, loc cit.

³ Brit. Med. Journ., 1871, ii. 527.

of no consequence, as to the result, whether such a communication existed or not.

Right here a word might not be amiss as to the stringency of the precautions in the smallest detail which must be insisted upon in this operation. One may perform many operations in surgery with no, or with what is perhaps worse, a half-way antiseptis, and achieve results which are not bad; indeed, they may be positively good, but when the tendon-sheaths or joints are liable to be opened, a slip in the method through carelessness, or, what is so prevalent in this country, ignorance or half-belief, is very apt to cause stiff fingers and joints, if not the loss of the extremity. Those who do not trust the method had better not seek its protection.

Without very much doubt, extirpation offers absolute immunity from recurrence, though Koenig (*loc. cit.*) says that even then recurrence may take place. But here it would be very difficult to discriminate between a recurrence and the formation of another cyst.

Clinically, extirpation can only be advised, conscientiously, for those cases which stubbornly recur after treatment by other methods, or those which have some especial symptom, pain, tenderness, etc., which seriously interferes with the following of the vocation of the person so affected. It is also to be recommended for those cases which lie in close connection with the radial artery.¹

DIAGNOSIS.—Rarely indeed are true ganglia mistaken for other affections; the converse, that other affections are rarely mistaken for ganglia, is not so true. The tendon-sheaths, and the region around the joints, are subject to other affections which at times render a differential diagnosis very difficult. Besides, ganglia may occupy unusual positions, as on the fingers, in the palm of the hand, or sole of the foot. The diagnosis may, however, at all times be decided by a crucial test—puncture and the withdrawal of some of the characteristic fluid—a good-sized needle being used, as the fluid flows with difficulty or not at all through the fine needle of a hypodermatic syringe.

Affections which may be mistaken for ganglia are: Gummata (no case was found reported); tuberculosis, in the form of a limited chronic granuloma form of tuberculosis.² And in general, other tumors of the region.

In this connection lipoma deserves especial attention; fat, as is well

¹ Jules Cloquet: Arch. Gén. de Med., 1824, iv. 232. Warner, *ibid.* Gasecoyne, Spence, Jos. Bell: Brit. Med. Journ., 1871, ii. 9, 36, etc. Pauly: Berl. klin. Wochenschr., 1878, 514. Skey: Lancet, London, 1870, i. 285. Rochelt: Wien. med. Presse., 1879, 1032. Falkson, *loc. cit.* Hoeftman, Eller, Gosselin, Knorr, Teichmann, Foucher, and Verneuil, *loc. cit.*

² Berger: Deutsch. Zeitschr. f. Chir., 1885, xxi. 335.

known, occurs normally¹ in the larger folds of the synovial joint and tendon-sheath membranes, the Haversian folds, and lipomata develop from this normal fat as do the appendices epiploicæ upon the large intestine.

Lipoma of the tendon-sheaths are quite rare; they develop not as other lipomata do, between the ages of twenty to thirty, but in youth; they are always situated upon the extremities, and usually symmetrically; they are, besides, of rapid growth and are usually attended by attacks of acute inflammation and a feeling of soft crepitation.²

In going over the literature, the following reports of tumors in this connection were found: Jacobson,³ a fibro-chondroma of the sheath of the flexor longus pollicis; Robert F. Wier,⁴ sarcoma and fibro-myxo-sarcoma; Markoe, cited by Wier, four cases of sarcoma; Sydney Jones,⁵ soft fibroma of palm of hand; Makins,⁶ fibroma of the tendon-sheath of the triceps cruralis. Bursal enlargements in the region of the elbow and knee may at times give rise to difficulty in the diagnosis which can only be decided by puncture or operation.

CONCLUSIONS.

1. Ganglia possess a specific and distinctive fluid contents.
2. They are in no way related to the bursæ.
3. They ordinarily do not communicate either with the joint or tendon-sheath cavity.
4. Though their origin is still in doubt, the weight of authority and evidence is for their development from the synovial follicles of Gosselin or from the sub-synovial bodies of Henle.
5. Ganglia probably develop more frequently from the joint capsule than from the tendon sheath.
6. For treatment, rupture and subcutaneous discission are to be recommended as palliative means, and the radical operation of formal excision as curative.

(To be continued.)

¹ Quain: Anat., vol. ii.

² R. Jaksch: Wien. med. Wochenschr., 1888, 1212. Sprengel: Centralbl. f. Chir., 1888, No. 9. Hacckel: Ibid., No. 17. Hammann: Ueber Gelenklypom., Bonn, 1887. Bryant: London Lancet, 1874, i. 846.

³ Brit. Med. Journ., 1879, i. 227.

⁴ Phila. Med. Times, 1883, xvi. 669; also N. Y. Med. Journ., 1885, xli. 309.

⁵ Trans. Path. Soc. Lond., 1887, xxxviii. 377.

⁶ Makins: Ibid.

A CASE OF ACROMEGALY, AND ILLUSTRATIONS OF TWO ALLIED CONDITIONS.¹

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WHILE the above title represents in a certain way the small series of cases that I desire to report, some further explanation is necessary as to my reasons for grouping, or rather contrasting, them with each other. The first case is one, I take it, of acromegaly proper; the second is an example of the collection of symptoms and signs grouped together by Marie in the *Revue de Médecine* for January, 1890, under the name of "Osteo-arthropathie Hypertrophiante Pneumique;" while the third case, of which mention will be made, is an example of hypertrophy of the pituitary body without any of the changes seen in acromegaly.

The specimens from the latter case are grouped with the two living subjects, from the fact that the pituitary body has been so frequently found to be hypertrophied in acromegaly, and that this case would go to prove, were any proof necessary, that the hypertrophy of the pituitary body is in nowise the cause of that disease, but is merely one of the many other changes found to be present in those cases that have reached the autopsy-table.

The first case that I desire to report is Daniel G., white, aged forty-five years, whom I first saw in 1885, when I was resident in the University Hospital in the ward of Dr. H. C. Wood.

He was admitted to the University Hospital in the spring of 1885, being at the time in a very somnolent condition. From his mother, who accompanied him, it was learned that he had one brother and two sisters, who were healthy and without any trouble similar to that from which he suffers. His father died of "apoplexy" at the age of forty-five years. His mother has since then died of pneumonia at the age of sixty-three years.

Until the age of twenty he worked in an ice-cream saloon, then worked on a farm out West for five years, and until ten years before his admission to the hospital (*i. e.*, until 1875) worked in a brass-foundry. He has never had syphilis, and most careful questioning has failed to elicit any history that could possibly point to specific infection. He has used alcohol, but not to an excessive extent. Ever since he can remember he has had large hands and feet; but he admits that his face has increased somewhat in size. When fifteen years old he was "as tall as most men are at twenty-one," and had reached his present length at the former age.

In 1877 he had pains all through his body supposed to be rheumatic, for which he was treated by pine-needle baths until an intense and exhausting diarrhoea set in, and he became very much reduced. Since that time he has been unable to work, and has had gradually increasing

¹ Read at the meeting of the College of Physicians of Philadelphia, January 6, 1892.

weakness in his legs, and at times vague pains through his body. He has had three attacks of somnolence—the first lasting for three weeks, the second and third attacks “lasting for a long time.” At the time of his admission to the hospital, his mother stated that his brain-power had failed for several years, and that he was apathetic and very irritable, but had had no delusions or convulsions. His face since the onset of his illness was “much swollen.”

On May 20, 1885, the following note was made: “Man of large frame, with very white skin. When aroused by being asked a question, he falls asleep again as soon as he has answered. He answers very slowly and deliberately, with a long pause before speech begins. The urine and feces are passed naturally; patellar reflex absent and sensation in feet impaired. Can walk about ward by aid of a cane.”

Before this note was made he had had after his admission to the hospital one attack of stupor that subsided, and when the above note was made was just entering upon another spell of somnolence. The urine at that time was negative. This somnolence increased until by May 23, 1885, the note states that he failed to answer questions, and lay with the eyes partly closed.

He was put upon iodide of potassium upon his admission to the hospital, the drug being given in doses of thirty grains three times a day until May 24, when it was doubled in amount.

On May 25, 1885, the eye-grounds were examined, and, according to the notes kept in Dr. Wood's note-book, the optic nerves were found to be atrophic, and there was marked deficiency of capillaries.

On May 27 inunctions of oleate of mercury were added to the treatment with iodide of potassium.

During the summer of 1885 he was given large doses of iodide of potassium and mercury, these being finally discontinued on account of increasing weakness, a tonic and stimulant line of treatment being adopted.

By September, 1885, his mental condition was worse; unconsciousness would appear and remain for days at a time. He gave evidences of suffering from headache at times, even during these periods of apparent unconsciousness. Before and after these attacks he could be frequently seen sitting on the side of the bed, fast asleep, with his fork raised toward his mouth, in which he had deposited a mouthful of food, without having chewed it at all. Upon September 15, 1885, the notes state that he was then in one of these spells, which had begun with vomiting; that he lay perfectly relaxed, and could not be aroused by violent pinching or by exposing the eyes to light.

During October and November, 1885, he improved, and was able to walk to the dining-room and feed himself. He still complained of very intense headache.

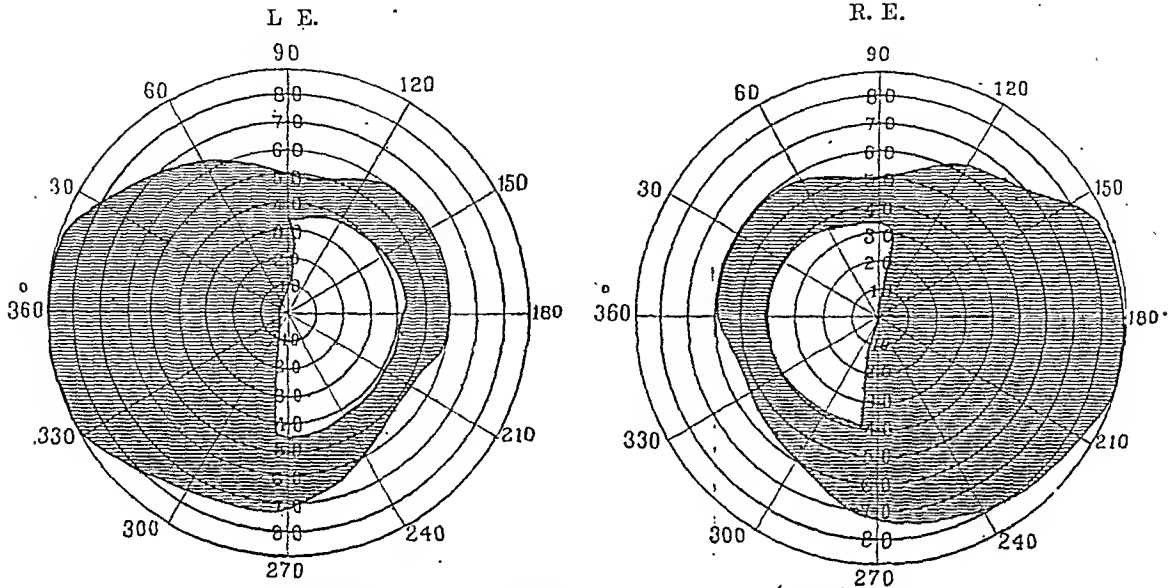
In December, 1885, Dr. Norris and Dr. de Schweinitz examined his eyes, and reported that there was partial optic atrophy on both sides with hemianopsia, both temporal fields being lost. (See Fig. 1.)

Upon May 14, 1886, Dr. Reeves examined his nose and reported that he had narrow nostrils, with hypertrophy of the mucous membrane on the lower turbinated bones, but no indications of pressure, and that the bony swelling on the outside of the nose did not extend inward.

Until his discharge from the hospital, on November 13, 1886, he suffered from excruciating headaches that were not relieved by any treat-

ment. He was given iodide of potassium and mercury to the point of tolerance; a prolonged course of chloride of gold and sodium, tonics, and stimulants; while for his headache potassium bromide, tincture of cactus, caffeine, theine, hyoscine, blisters, and the actual cautery were all tried with little or no benefit.

FIG. I.



Visual fields of D. G. Taken at the University Hospital in 1885.

I saw him again on January 4, 1892, and then made the following notes: Since leaving the hospital in November, 1886, he has constantly had severe generalized headache, with apparently causeless exacerbations. These show no periodicity. There is a constant feeling of weight in the vertex, and every now and then there is an agonizing feeling, as though something were within the skull "scraping away the brain from the inside of the head from before backward." He has had no spells of somnolence since he was seen by me before; on the contrary, he sleeps but little. His general health has been fairly good, but his muscular strength very slight. Cold weather agrees with him better than warm, as during summer he sweats a great deal and feels much oppressed.

He says that his memory is very poor, but he seems to remember readily persons that he saw and events that happened seven years ago. He has had no convulsions. The sense of hearing, taste, and smell are all normal. Vision is very poor, especially with the right eye, and he cannot see with his right eye persons approaching from the right side. For fifteen years he has had no venereal desire or power. His appetite is poor, digestion good, no vomiting. His bowels are inclined to be costive. He gets short of breath rapidly and is tired by walking a few squares. His feet swell a little toward evening. He has no cough.

He is now 6 feet $1\frac{1}{2}$ inches in height and weighs 210 pounds. There is no sign of an excessive amount of adipose tissue. He talks very slowly and deliberately, and is rather lachrymose. His face is very large and

heavy, certainly more so than in 1885-86. The accompanying illustrations (Figs. 2 and 3) show the increase in size of the face in twenty-three years. The brain-case is relatively much too small. The forehead slopes strongly backward, the supra-orbital regions being very massive. Breadth of brows, 13.75 cm.; bi-parietal diameter, 16 cm.; occipito-frontal diameter, 21.5 cm.; circumference of head, 61.5 cm. The ears are not disproportionately large. The eyes are relatively small when seen between the thick and heavy eyelids. The nose is very large and almost massive; the malar bones too heavy for the rest of the face. The chin is somewhat prominent, but not very markedly so. The skin of the face is very white, contrasting strongly with his thick black hair. The lips are large, thickened, and of a deep-red color.

FIG. 2.



D. G., at twenty-two years of age.

FIG. 3.



D. G., at forty-five years of age.

The tongue is very large and thick, the mucous membrane thickened, and the surface much furrowed. The teeth are in bad condition, and are very small for the size of his mouth and jaws. The alveolar process of the lower jaw is considerably broadened.

The following report of the condition of the eyes was sent me by Dr. G. E. de Schweinitz, who kindly made the examination for me:

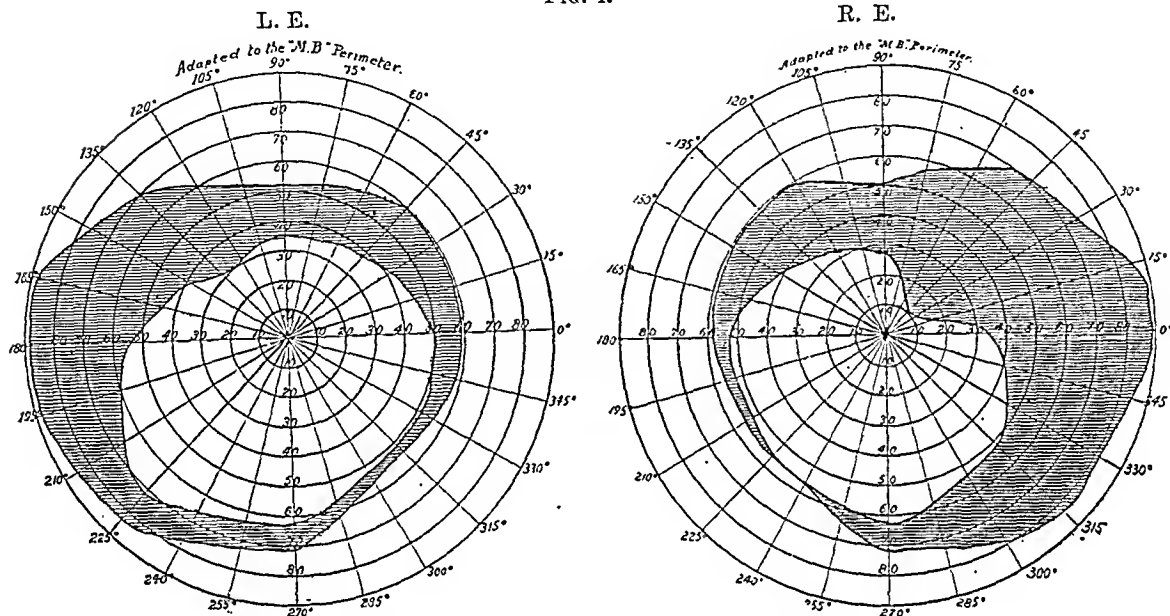
Refractive error, myopia. V in O. D., with correcting lens, equals 6/xxvii; in O. S., with correcting lens, 6/ix. There is rapid vertical nystagmus, and divergent squint of the right eye owing to paresis of the right internal rectus muscle. The double images are fused by a prism of 8°. The pupils are equal in size and react promptly to the changes of light and shade. Careful examination failed to reveal the hemiopic pupillary inaction. Each optic disc is oval, exceedingly gray, its centre containing a shallow cup. There is not much change in the size of the retinal vessels. The lack of capillarity and the atrophic pallor of the disc are most marked upon the right side. The fields of vision are represented in the diagrams (see Fig. 4). The outer lines mark the limit of the normal visual fields; the shading, where vision was lost; and the inner white areas, the extent of the preserved fields.

The pharynx is capacious, and there is chronic catarrhal inflammation of its mucous membrane. The cartilages of the larynx do not seem to be abnormal.

All the cartilaginous portions of the nose are very thick. The large turbinated bones are plainly seen on but moderate separation of the *alæ*.

The neck measures 40.5 cm. The thyroid gland cannot be felt. There is no dulness over the upper portion of the sternum. The shoulders are sloping and inclined forward. (See Fig. 5.) The scapulæ are prominent but not enlarged. There is a marked forward curve of

FIG. 4.



Visual fields of D. G. Taken in January, 1892.

the upper portion of the spinal column, beginning at the fifth dorsal vertebra, while there is some lumbar lordosis, with corresponding prominence of the abdomen and lower portion of the thorax.

The spinous processes are in a straight line and are not enlarged.

The clavicles have an irregular surface, but as a whole are not enlarged. The chest is very irregular in shape, some ribs being very large, with numerous nodosities on their surfaces. At the junction of the manubrium with the body of the sternum there is a very marked prominence. The sternum measures 23 cm. in length. The xyphoid cartilage is not prominent. The second, fifth, and sixth ribs are *very* prominent, but all of the ribs show roughnesses upon their surfaces. The junctions of the eighth ribs with their costal cartilages show a very marked swelling, plainly visible and palpable. The costo-sternal angle is very oblique.

Examination of lungs and heart negative. Areas of splenic and hepatic dulness normal. There is but little axillary or thoracic hairy development.

The crests of the ilia are not notably enlarged.

The shoulder- and elbow-joints show nothing abnormal. The bones of the arms and forearms do not appear to be altered in any way. The muscles of these parts are, however, very soft and flabby. The upper arm measures 34.25 cm., the lower 29.9 cm. in length.

The wrists are large but not deformed, measuring 20.25 cm. in circumference, 4.25 cm. in thickness.

The hands are seen to be very large but not deformed; the fingers look stumpy and square at the tips. (See Fig. 6.) The skin of the hands is soft and pliable, and entirely hairless. The nails are stubby and fissured longitudinally. The metacarpal bones are not disproportionately large. Thickness of thenar portion of hand $2\frac{1}{4}$ inches. The breadth of the hand at the level of, and including the distal end of the metacarpal bone of the thumb, is 13.5 cm.; at the level of the

FIG. 5.



D. G., showing marked dorso-cervical kyphosis.

heads of the metacarpal bones of the fingers and excluding that of the thumb the measurement is 10.75 cm. The length of thumb is 7.75 cm., that of the middle finger is 11.5 cm. The circumference of the last phalanx of the thumb is 8.75 cm.; that of the middle phalanx of the middle finger is 7.5 cm.

In the hands temperature, pain, and tactile sense is good. Dynamometer registers in the right hand 97, in the left 65. The biceps jerk is present, but not marked.

The thighs and legs are small when compared with the large knees and

feet. The knees measure in circumference 42.5 cm., the greater portion being made up by the inner condyles and heads of tibiae. The distance from great trochanter to internal condyle is 44.5 cm.; that from upper border of patella to external malleolus is 49.5 cm. The patellæ are large but not out of proportion. Patellar tendon reflex absent on both sides.

The feet measure 29.25 cm. in length, 10.75 cm. in breadth at the widest part. The distance between the malleoli is 8 cm. The great toe measures 7.75 cm. in length, 11.5 cm. in circumference. Temperature, pain, and tactile sense in the feet are well preserved.

The urine is acid; sp. gr. 1022; marked albumin reaction with Heller's and the trichlor-acetic acid tests; a slight deposit with picric acid; with heat a marked precipitate that cleared up with the development of a strong red color upon the addition of nitric acid. There was no sugar; no casts, or crystalline deposit.

FIG. 6.



Left hand of D. G., showing stumpy appearance of fingers.

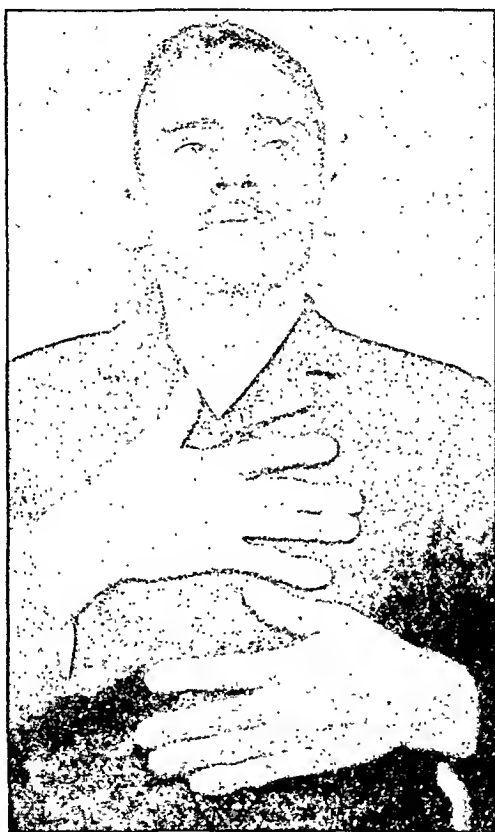
The second case is the example of *osteo-arthritis hypertrophiant pneumique*, of which I spoke.

He is a patient in the Episcopal Hospital, and it is through the kindness of Dr. Miller, who is now in charge of the medical wards there, that I am enabled to record the case. He is single, aged twenty-nine years, and was formerly a carpenter. His father is living and healthy; his mother died at the age of fifty-seven years of possible phthisis. One paternal aunt died of phthisis, as did also one maternal aunt. The rest of the family history is entirely negative.

At the age of fifteen years, while working on a farm, he began to have a slight hacking cough and spat up some blood. The cough continued

and he began to have night-sweats. At about this time he noticed that his finger-tips and nails were becoming rounded. At the age of twenty-four years he had an attack of "dysentery" which lasted three months. He says that during the attack he had fifteen stools daily, without blood but with much straining. For a year after this attack he ceased coughing, but at the end of that time the cough again set in. During his attack of "dysentery" he is said to have had "hectic fever." At the age of twenty-eight years another attack of "dysentery" began and has lasted ever since, with, however, intervals of freedom. While the bowels are loose expectoration ceases, to begin again when the movements return

FIG. 7.



Portrait of case of osteo-arthritis hypertrophique pneumique.

to their normal number. At the close of this second attack of intestinal disturbance his weight had fallen to 108 pounds; but in three months it came up to 167 pounds. As has been said, his finger-tips began to be rounded at the age of fifteen years. He states that at one time, about three years ago, he was able at will to produce dislocation of various joints, notably of the hips and knees. He has had frequent spells of rheumatoid pain in the various joints, and at times his hands are so stiff that he cannot do more than semiflex them. For seven or eight years after his cough began he was stiff in all his joints whenever he attempted to move. About one year ago he had a peculiar attack, in which he

suddenly found that his whole right side, including the face, felt numb; he fell toward the right side and would have fallen had he not been able to obtain support. This attack lasted for five minutes, leaving no prolonged sequelæ, and never being repeated except for a slight transient sense of numbness upon the right side of the face when he has held his head in certain positions.

His back has been bowed from almost the onset of his chest trouble—the cough, clubbing of his fingers, stiffness in the joints, and arching of the back having all been noticed at very nearly the same time. He has never had syphilis, nor has he been addicted to the use of alcohol. He has never had any but a very small amount of sexual desire. Sense of hearing, taste, and smell are normal. States that his memory has been failing for five years; never has headache.

On examination, he is seen to be much bowed, but otherwise would probably attain a fairly good height, it being now five feet seven and one-half inches. He stands with the head thrust forward between his high shoulders. The head is large; the face rather small. The lower jaw is slightly prominent (see Fig. 7), the horizontal ramus measuring four and one-half inches—the angle formed by the two rami being very oblique. The malar bones are somewhat prominent; the ears large and projecting sharply from the skull. The teeth are in good condition, save that many of them have been extracted. The alveolar borders are normal; the tongue is clean. Laryngoscopic examination shows nothing abnormal. The skin of the face is of such color as is seen in those much exposed to the sun, although he has not for many years worked out of doors. The eyes are natural in appearance, the pupils equal and reacting well to both light and accommodation. There is no gross change in the field of vision. The eye-grounds show no pathological changes. The thyroid gland cannot be detected by palpation.

The thorax is markedly bowed at its upper portion, there being marked dorso-cervical kyphosis, of which the most prominent part is composed of the seventh dorsal vertebra. A plumb-line dropped from this point swings four inches clear of the sacrum. There is but a slight development of hair upon the trunk.

The chest is symmetrical, but the right side moves poorly in respiration. The apex-beat is in the normal position, and the area of cardiac dulness occupies the normal extent of surface. At the apex the heart-sounds are normal; at the pulmonary cartilage the second sound is accentuated, as it is also at the aortic cartilage. At the latter point the first sound is replaced by a harsh but not loud rumbling murmur, somewhat inconstant and affected by position. Over the great vessels of the neck there is a to-and-fro rumbling sound, without the characters usually found in vascular murmurs.

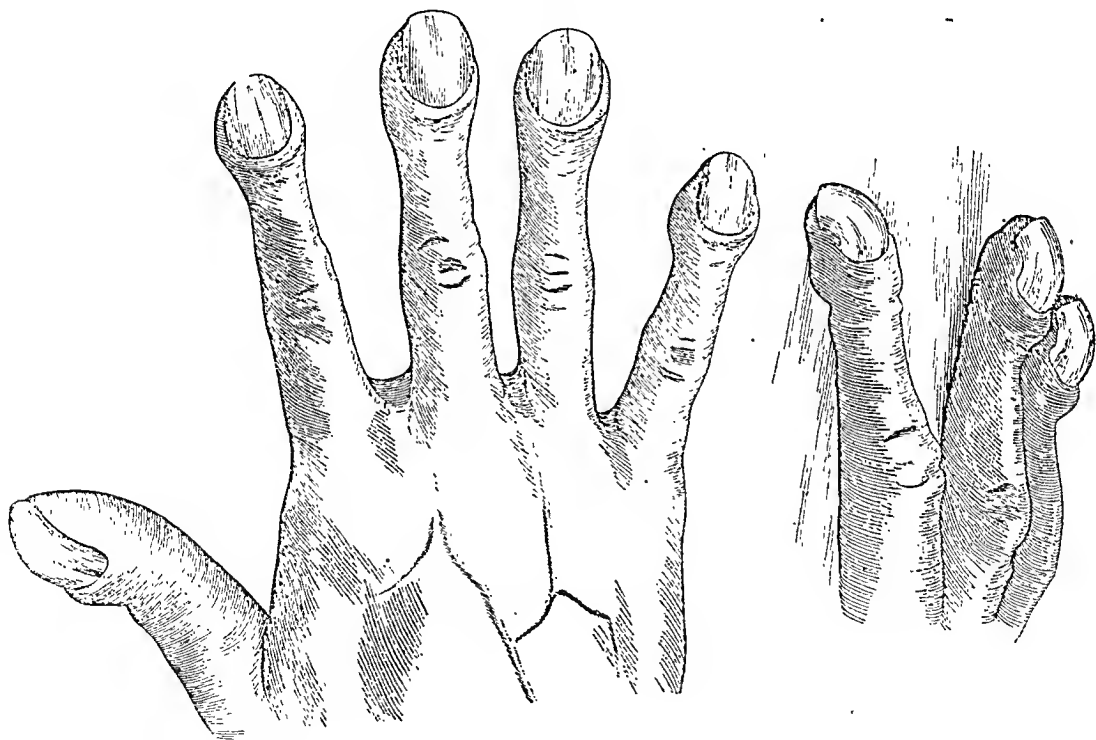
Over the whole left lung there is markedly exaggerated resonance. On the right side anteriorly there is marked dulness with cracked-pot sound in the fourth interspace. Posteriorly, also, there is dulness over the whole right side, except for hyper-resonance above the seventh rib. The breath-sounds on the left side are somewhat puerile; over the right side, as a whole, there are distant, faintly heard, tubular breath-sounds, with cavernous breathing and whispering pectoriloquy anteriorly down to the fourth rib and posteriorly down to the level of the seventh dorsal spine. Posteriorly in this area of cavernous breathing there is also metallic tinkling. Over this area percussion with coins fails to give the

bell-sound. The expectoration is profuse, muco-purulent, of fetid odor, and contains neither bacilli, elastic tissue, nor fatty acid crystals. Over the upper portion of the sternum there is no area of dulness that can be separated from that of the right side of the thorax.

The scapulæ are normal, save that on each side there is a marked bony prominence a little to the inner side of the middle point of the spinous processes.

The shoulders are somewhat large, chiefly from uniform increase in the size of the peripheral extremities of the spinous processes of the scapulæ. There is no limitation in the motion of the shoulders. The upper arm is small, but there is no deformity: The forearms are small, but toward the wrist-joints there is gradual swelling and broadening until the wrists are reached. This swelling is chiefly upon the radial side, and is not very marked. The elbow-joint measures 24.5 cm. in circumference; the wrist-joint, 18.75 cm. in circumference, 7 cm. in breadth, 4.25 cm. in thickness.

FIG. 8.



Hand of case of *osteo-arthritis hypertrophique pneumique*, showing clubbing of ends of fingers.

The hands show a peculiar deformity, almost, if not quite, confined to the last phalanges of the fingers and thumbs. This deformity is symmetrical and the description of one will answer for both: The carpal and metacarpal portions present no abnormality. The accompanying reproduction from a drawing (Fig. 8), kindly made for me by Dr. J. M. Taylor, shows the appearances noted. The fingers are natural until the last phalanges are

reached, when there is seen to be an increase in all the diameters, giving to the fingers the appearance—suggested by Marie—of drumsticks. The nails are large, strongly curved from side to side and from base to edge. The arcs formed by the nail above and the pad of the finger below give the appearance of the recurved beak of a parroquet. The nails are somewhat waxy, livid, and brittle—one or two of them being longitudinally split. (The man states that he can very readily split the nails by means of a pin.) The nails seem to lie merely upon the surface of the skin, there being no bed, but the edges of the nails reaching to or overlapping the skin surface of the fingers. There is no marked tendency to the production of sweat on the skin covering the dorsal surface of these phalanges, such as has been noted by Marie. This enlargement of the finger-tips seems to be made up by all the tissues, but chiefly by change in the bone. The skin is certainly rather thinner than that covering the rest of the fingers, and there is no evident subcutaneous thickening or induration. The thumbs are affected equally with the fingers. The following measurements were taken:

Middle finger.

Length from metacarpo-phalangeal joint to tip	11.5 cm.
Breadth of middle phalanx	2 "
Breadth of last phalanx	24 mm.
Thickness of middle phalanx	19 "
Thickness of last phalanx	20 "
Length of nail	2 cm.
Breadth of nail	23 mm.

Thumb.

Breadth of first phalanx	23 mm.
Breadth of last phalanx	28 "
Thickness of first phalanx	24 "
Thickness of last phalanx	24 "
Length of nail	25 "
Breadth of nail	29 "
Breadth of hand, excluding thumb	9 cm.

The hands are weak, the dynamometer registering on the right side 36 K., on the left, 41 K. Sensation is unaltered.

Station is normal with eyes open and closed. The knee jerks are normal and equal; ankle-clonus cannot be developed.

The feet and legs are so much swollen from œdema (said to have been present for eight years, but to subside on lying down) that no measurements were taken save at the ankle—where, after the serum was displaced, the breadth of the joint, as measured from internal to external malleolus, was found to be 91 mm.—and at the knees, the circumference of which was 39 cm. when the patient was erect. The patellæ are not enlarged, nor is there any bony deformity of the joints. The tibiæ seem large and heavy. The feet are large, but chiefly the last phalanges of the toes, where almost the same appearances are found as in the hands.

The urine contains no sugar; a moderate amount of albumin; no casts or crystalline deposit.

I wish to remark of the third case but little, as its interest lies solely in the pituitary body. The specimen was found at the post-mortem examination of a woman under my charge at St. Clement's Hospital.

She was a white woman, forty-three years of age, single, a native of England. I found her in the ward when I went on duty in the spring of 1891, and obtained the following brief and possibly inaccurate history: Nothing in the family history has any bearing on the case, nor does the history of her past life throw any light upon the etiology of her trouble. For thirteen years she has been blind, this blindness having gradually increased for a long but undeterminable period. For two or three years difficulty in walking progressively increased until absolute inability was attained two months before her admission to the hospital. She complained much of intense pains in the extremities, chiefly nocturnal, with severe but intermitting cephalalgia. There was no trouble with the bladder or rectum.

Examination showed that she was a small, spare, frail-looking woman. Face symmetrical, features small. Pupils equally and widely dilated, not responding to light. Both eyelids drooped, and there was nystagmus, both probably due to blindness. Ophthalmoscopic examination showed marked pallor of the whole eye-ground, with a brilliant white, contracted, sharply-margined disc, and vessels reduced to minute threads. The hands and arms were not paretic. She was absolutely unable to walk, but could feebly move the legs in bed. There was quite marked spasticity in the legs, but no contractures were present. On both sides knee-jerk was very much increased, ankle-clonus was easily obtainable, but no plantar reflex elicited. There was no nerve-trunk tenderness. Sensation in the legs was distinctly impaired.

A diagnosis of multiple syphilitic lesions of the central nervous system was made, and she was put upon ascending doses of the iodide of potassium, with phenacetin p. r. n. for the headaches. She improved decidedly, although slowly, until March 10, 1891, when the right arm became weak, and loss of sensation in the left arm was noticed. The iodide of potassium was then discontinued, inunctions of mercury being substituted. In ten days the gums were affected, but meanwhile the paralysis of the right arm diminished to such an extent that she was able to raise the hand to her mouth. This improvement lasted but a short time, when the power again entirely disappeared in the right arm, and there was added paresis of the left side of the face. Coma then appeared and gradually deepened until she died. There were no convulsions.

Owing to lack of time and poor facilities, the brain, spinal cord, and sciatic nerves alone were examined. The dura mater was slightly thickened. On removal of the brain there was left remaining in the sella Turcica a slate-colored globular mass, evidently an enlarged pituitary body. The pia over the convexity was normal; at the base it was thickened, opaque and whitish in spots. This alteration was most marked in the interpeduncular space, while around the root of the left facial nerve there was a dense white infiltration of the pia. The optic chiasm was flattened from above downward, the optic nerve being very small, while the optic tracts were nearly, if not quite, of normal size. Upon removing the mass in the sella Turcica, the latter was found to be much hollowed out and slightly roughened. The mass itself was globular, measuring between a half and three-quarters of an inch in diameter, and was cystic to the touch. After hardening in Müller's fluid sections were cut and there were found: practically complete atrophy and sclerosis of the optic nerves; sclerosis of the lateral columns of the lumbar and dorsal cord; and hypertrophy of the glandular portion of the pituitary body,

with a few cystic cavities, and some increase of fibrous tissue at the periphery.

As I said at the beginning of this paper, these cases are not reported as in any way related to each other, or as links in a chain, but are placed together because the first two cases illustrate two conditions that were at one time mistaken for each other; while the specimen of hypertrophy of the pituitary body is mentioned, not only because it is a rare lesion, but also because in many of the reported autopsies upon cases of acromegaly a similar condition has been found coincidentally, and because a similar condition in the case of acromegaly here reported would readily explain the hemianopsia formerly present. The change in the fields of vision seen by comparing those taken in 1885 with those of this year is difficult to explain.

In regard to the second case I would venture the opinion that the condition of the right thoracic cavity was due to an old empyema with thickened walls, that had at some former time opened both into a bronchus and into some portion of the intestinal tract, producing the signs presented upon physical examination, the former attacks of diarrhoea, and the peculiar peripheral lesions which Marie is inclined to assign to a poison created in the lung, and selecting the bony and articular portions of the body in a manner analogous to that of the rheumatic poison

A CASE OF INTUSSUSCEPTION TREATED BY LAPAROTOMY, TERMINATING IN COMPLETE RECOVERY.

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AND

A. PEARCE GOULD, M.S., F.R.C.S.,

ASSISTANT SURGEON TO THE MIDDLESEX HOSPITAL.

MARY W., aged four and one-half years, was admitted into Murray ward, Middlesex Hospital, on the morning of July 2, 1891, under the care of Dr. Biss, in the absence of Dr. Coupland. The mother stated that on the previous day the child had fallen down some stone steps at school and cut her forehead. The wound, being slight, was bound up at home, and nothing further noticed until the evening, when the child seemed poorly and out of sorts. She was put to bed and went to sleep, but woke about 3 A.M., suffering from severe griping pains in the abdomen, accompanied by straining but ineffectual efforts to pass a motion. These symptoms continuing, she was brought to the hospital in the morning. After admission into the ward the pain and straining became worse, and she began to pass mucus *per rectum*, and in the afternoon an

ounce or two of blood. Any attempt to administer liquid food was promptly followed by vomiting. No urine had been voided for about eighteen hours, nor had any passage of flatus from the bowels been observed. The last normal motion was passed on the morning of the day previous.

State on admission. The patient is a fairly well nourished child with a placid expression. She lies quietly in bed and seems easy, except when a paroxysm of pain comes on. Each attack lasts only a few seconds. The skin is warm and moist. Temperature, 97.6° ; pulse, 90, of fair quality, but rather irregular in rhythm; respiration, 26 per minute. The tongue is moist and furred; appetite lost. The chest is normal in every respect; heart-sounds normal and free from bruit. The abdomen is not distended, and its walls are moderately relaxed. On palpation, a swelling of cylindrical shape, rounded off laterally and at the ends, can readily be felt toward the left side, about midway between the umbilicus and the anterior superior spine of the ilium, and in a direction about parallel with the outer margin of the rectus abdominis. The tumor is slightly tender, dull to percussion, somewhat mobile, but apparently deeply attached to the posterior wall of the abdomen. The child is very tolerant of examination during the intervals of pain.

4.30 P.M. The brief attacks of pain continue, attended by efforts to defecate, nothing but mucus stained with blood being passed. The pains are, however, so slight and transient that it has not been found necessary to give any medicine. The pulse is becoming more irregular, and has a staggering character. A catheter was passed and about two ounces of urine withdrawn from the bladder. The diagnosis of intussusception having been made, it was decided to attempt to release the bowel by gentle insufflation, failing which, laparotomy should be immediately performed. The child was accordingly removed to the operating theatre and placed under chloroform. A good deal of air was cautiously passed into the bowel with the insufflation apparatus, but without any effect upon the tumor. Mr. Gould then made an incision two inches long in a vertical direction outside and parallel with the edge of the rectus muscle, and just over the position of the tumor. The intussusception was found to be in the descending colon, about three inches of bowel having been invaginated. The abdominal wound was enlarged to facilitate manipulation and the intussusception brought into full view. Cautious pressure against the apex of the intussusception soon released it from the grip of the bowel above, and it was found that no injury had been inflicted on the parts involved, and that there was but very little congestion and no peritoneal inflammation. The parts were carefully cleansed with warm boric acid solution, and the wound in the abdominal wall having been closed with silkworm-gut sutures, a dry antiseptic dressing was applied and retained by strips of plaster.

10 P.M. The child sleeping peacefully. She has not been sick; no more blood or mucus has been passed. The pulse is regular—118 per minute; temperature, 102.2° .

July 3, 9 A.M. Has had a good night; retched only once, and that but slightly; no pain; no action of bowels. Pulse, 132, regular; temperature, 100° . Has passed urine, which is found to be normal in all respects.

4th, 9 A.M. Has had a good night; no pain. Temperature, normal;

pulse, 112, full and regular. Nothing has been passed *per anum*. Abdomen soft and flat, so that the dressing is not sufficiently firm. One side of the strapping was raised and re-applied more firmly. Tongue covered with white fur.

5th. A good night; no pain; abdomen flat and soft. Nothing has yet passed *per rectum*. Temperature, 98.8°; pulse, 100.

The child from this point improved rapidly and steadily. On July 9th she was placed on milk diet with custard pudding. The stitches were removed, and the wound found to have healed by first intention. On the 18th the bowels acted naturally, and subsequently continued to do so. On the 16th she was allowed up, and on the 22d left the hospital quite well, but wearing a narrow binder to support the abdominal wall at the seat of the wound.

REMARKS.—The case illustrates three points in the clinical history of this disease, under which, respectively, a few remarks may be made:

1. *Causation*. Invagination of one section of the intestine into another below it, is occasioned, generally speaking, by too sudden, or unusually forcible peristaltic action in the upper portion of the two. Of such cases the term "*invaginatio spasmodica*" has been used; and the experiments of Nothnagel (quoted by Treves, *Intestinal Obstruction*, page 204) have proved that electrical stimulation producing sudden contraction, does actually lead to intussusception of the contracted portion. In the child treated by us, the sudden fall down some stone steps, in which the abdomen may have been struck, or jarred, or the general shock of which may have acted as a stimulus to peristaltic action, was the apparent cause of intussusception. No other cause can be traced.

2. *Treatment by Inflation, or Injection*. It is probable that the view most generally held is, that in cases of recent occurrence, where the intussusception is not too large, nor the duration so prolonged as to suggest inflammatory adhesions, gangrene, or softening of the coats of the bowel, treatment by injection of water, or insufflation of air, ought to be tried with all due precautions, before any proposal to open the abdomen is entertained. We are not prepared at present to seriously demur to this view, generally stated; and, indeed, in the above case we acted upon it. It is, however, noteworthy that the action taken was perfectly futile. Insufflation was cautiously but sufficiently performed. The injected air was repeatedly felt swelling up the bowel to the point of intussusception, but effecting no alteration in the tumor. Now, as the obstacle to reduction in this case was simply the muscular clasp of the intestinal wall, and the intussusception was comparatively small, it would appear to have been a favorable case for insufflation; but that means of treatment entirely failed. The whole case for injection, or insufflation, must, however, be regarded as open to objection on other grounds than that of occasional futility. It appears a grave question whether the amount of force often employed does not expose the intestine to serious

risk of rupture, especially in cases where the injury is not recent; a danger which at present it is difficult to estimate, for want of a sufficient number of reported cases. It is exceedingly probable that those in which the intussusception has been reduced by this means, but which eventually terminate unfavorably, have really undergone rupture of the bowel, or its peritoneal coat, in consequence of the forcible distention employed, with the inevitable result of fatal peritonitis. In this connection we would draw attention to a valuable contribution to the subject by Dr. Mortimer, in the *Lancet* of May 23d last, based upon experimental and clinical observations. Reference may also be made to a paper on "Three Cases of Intussusception Treated by Inflation," by Dr. Frederick Taylor, in the *Clin. Soc. Trans.*, vol. xvi. p. 64. His first two cases were cured, but the last ended fatally, after having apparently undergone reduction by the treatment with air. It is possible that here, where the results of inflation were so delusive, the patient might have been saved by early abdominal section.

Another objection to the plan of inflation is the liability to recurrence of the intussusception. Many recorded cases illustrate this. It is capable of two explanations. In some cases it would seem as if the invagination had not been completely reduced, although the tumor previously felt had disappeared; and so, when the pressure from below was removed, the intussusception quickly increased again to its former size. But another fact must not be lost sight of. However employed, whether air, hydrogen gas, or water is used, the bowel at, above, and below the intussusception is distended. Active peristalsis is thereby excited, and in the swelled and congested state of the parts, recurrence of the invagination is only too prone to occur. The treatment by inflation fails to leave the parts after reduction at rest; and that is a serious and inevitable result of its employment.

3. *Laparotomy.* This is certainly the most effective, and probably in view of modern antiseptic methods, the safest mode of treatment. In cases seen sufficiently early, the prospects must be regarded as exceedingly good. In our own case the operation was easily performed, the intussusception readily reduced, and recovery ensued without a bad symptom. Considering the dangers attending inflation, it is probable that the risks of abdominal section, in cases where no great delay has occurred, are distinctly less than those of the inflation and injection method; and it appears likely that a wider experience of the operation, both on the part of the profession and the public, will lead to its more frequent and early adoption, with the result that intussusception will become a much less fatal affection than it is at present.

In this case the incision was made in the left *linea semilunaris* instead of the *linea alba*, and with the best results. It must be remembered that the mere invagination of a coil of bowel so draws upon its mesen-

tery as to fix it more or less, and often to such a degree that unless the operation-wound is placed over the tumor it is extremely difficult, if not impossible, to expose the intussusception clearly. We would, therefore, recommend that in all cases the incision should be made over the tumor. Having exposed the tumor, its reduction must only be attempted in one way—by gentle pressure on the invagination from below, and not by traction from above. The danger at this point is laceration of the bowel, which commences at the peritoneum. Such a lesion can be produced very readily indeed by traction, while with upward pressure it cannot. Of course, this pressure, as in all other intra-peritoneal manipulations, must be made with great care and gentleness, and the surgeon must make certain of having completely reduced the invagination. Senn has proposed that after reduction the mesentery of the offending portion of bowel should be shortened by a fine catgut suture. A case under the care of one of us, in which laparotomy was performed twice for intussusception within three months, shows the liability to a true recurrence of the affection (see *Med. Times and Gazette*, 1891). With that case in our recollection we did not employ the suture in the case now recorded; and we should be inclined to reserve it for those cases where the mesentery is unusually long. Such a suture may be injurious by interfering with the blood-supply of the bowel; and it must be so placed as to reduce to a minimum this danger.

The after-treatment of such a case as this may be summed up in the one word, *rest*. For this reason a dressing firmly fixed on by strips of plaster is much to be preferred to a binder. Solid food must be withheld for a week or ten days, and no steps should be taken to obtain an evacuation of the bowels before the tenth day, unless specially indicated. However well the patient may be, he should not be allowed to sit up, or move freely about the bed, for the first week, for any such sudden change of posture may be followed by recurrence of the invagination.

DESCRIPTION OF A PUS-PRODUCING BACILLUS OBTAINED FROM EARTH.¹

ALSO, A CONTRIBUTION TO THE STUDY OF TETANUS.

BY MEADE BOLTON, M.D.,

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WHILE endeavoring to get out a culture of tetanus bacilli by Kitasato's method from garden earth, I found a bacillus which causes abscesses

¹ Referred to by Prof. Welch, in the paper of the referee, read at the meeting of the Second Congress of American Physicians and Surgeons, in Washington, D. C., September 22, 1891. See this JOURNAL, November, 1891.

very promptly at the seat of inoculation in various animals. The organism was obtained as follows: A rat was inoculated with garden earth at the root of the tail in the manner advised by Kitasato¹ and others, and it died within forty-eight hours of tetanus. Oblique agar tubes were then inoculated from the wound and put in the incubator for forty-eight hours. A rat was inoculated with one of these mixed cultures, and an abscess formed at the seat of inoculation, but the animal had no symptoms of tetanus. From the pus of this abscess I succeeded in getting out the pus-producing organism. I did not plate the pus, but made a stab culture in gelatin. Another rat was inoculated from this impure culture, and a gelatin tube was inoculated from the resulting abscess. In this way, inoculating from abscess to gelatin, and from gelatin culture to animal, I finally obtained a pure culture. The organism which I obtained in these cultures became more and more predominant in each successive culture and abscess; and I tried several times to isolate it by making roll tubes and plates; but, owing to its slow growth, the colonies were overgrown, or the gelatin was liquefied by other organisms, so that I was unable to isolate it by plating. I was only able to get colonies by plating a pure culture.

The organism, which I call *bacillus pyogenes soli*, in accordance with Flügge's method of nomenclature, is about the size of the bacillus of diphtheria, and resembles the latter closely in appearance. (Figs. 1 and 2.) It presents the same irregularities of shape, and the transverse unstained clear spaces in stained preparations, as the diphtheria bacillus. The individual bacilli vary greatly in length and thickness, and many of them are bent and narrower through the middle than at the poles; all preparations show a great many different shapes, which are apparently forms of involution. They stain readily with any of the ordinary stains, but take the stains irregularly, sometimes showing very deeply-stained spots, which occasionally look perfectly round. (Fig. 2.) This peculiar staining is more apparent with preparations stained with methylene-blue. They cannot be stained by Gram's method. They do not possess independent motion. I have not yet observed any spores with certainty; though highly refractive ovoid bodies are sometimes met with in the club-shaped ends of the bacilli, in old cultures; these, however, do not seem to be specially resistant to heat.

They seem to be very sensitive to any excess of alkali in the nutrient medium; a very slightly acid medium seems to be most favorable to their growth.² At ordinary temperatures the growth is very slow. In

¹ Dr. S. Kitasato: "Ueber den Tetanusbacillus." *Zeitschrift für Hygiene*, Bd. vii. p. 225.

² I am compelled to speak with reserve in regard to this point; for there are other conditions affecting the rapidity of growth, which I have not yet been able to determine.

neutral or slightly acid gelatin they grow so as to form isolated colonies along the stab, somewhat similar to the growth of the streptococcus of

FIG. 1.

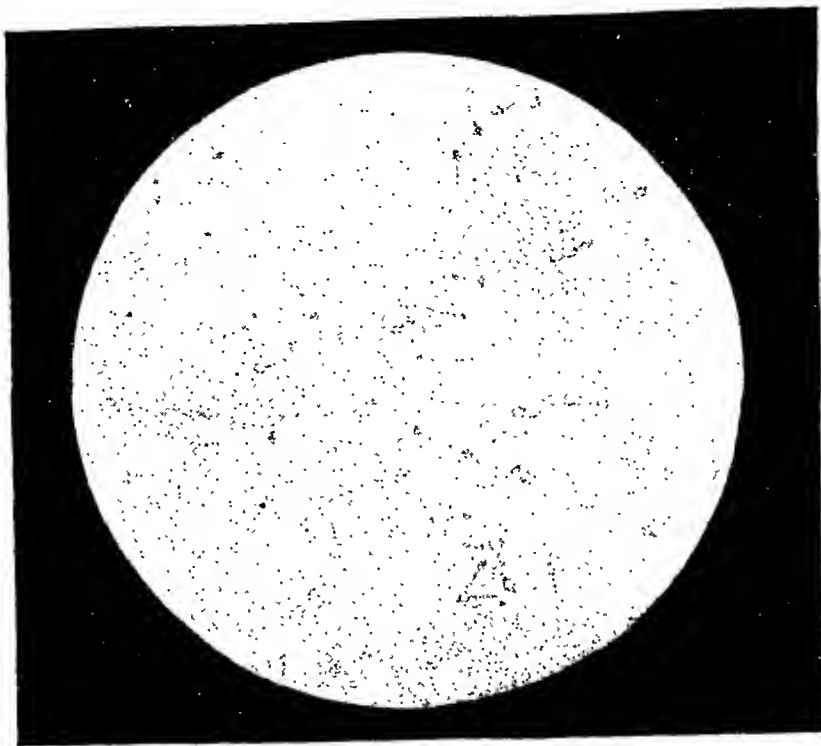


FIG. 2.



Bacillus pyogenes soli, showing the great diversity of size and shape ordinarily met with, and also the irregular staining.

erysipelas; but the colonies in the depth are usually more isolated and larger than near the surface. The gelatin is not liquefied, and the

I have gotten great differences in the rapidity of growth in different batches of gelatin, made with no intentional variation in the preparation, and of apparently the same chemical reaction. A quite rapid growth has been recently obtained in distinctly alkaline gelatin.

growth remains confined to a narrow line, the colonies on plates or in rolled tubes remaining very small. They are lemon-yellow and very finely granular under the lower power of the microscope, and are either perfectly round or have a more or less broken or wavy outline. The growth on potatoes and on blood serum is very weak, and presents nothing characteristic. To the naked eye the growth in all cases is white. In hydrogen tubes the growth is very good. I have rarely succeeded in getting a growth in agar.

The effect upon animals differs with the mode of inoculation. In rats, gray mice, rabbits, and usually in white mice, subcutaneous inoculation of small, or even large, amounts, produces an abscess confined strictly to the seat of inoculation. Injections of from $\frac{1}{2}$ to $\frac{3}{4}$ c.c. of liquid cultures into ear veins of rabbits, produce, in some cases, multiple abscesses, especially in the joints and kidneys. Subcutaneous inoculation produced in one case abscesses of the joints in a white mouse.

The abscesses following subcutaneous inoculation form very quickly, within twenty-four hours, and run a longer or shorter course, from forty-eight hours to eight or ten days, in direct proportion to the amount of the culture introduced. The animals do not seem to suffer any inconvenience, as a rule, and after the abscess is opened suppuration ceases.

The organism is found aggregated in small and large irregular clumps in the pus, many of them lying in the pus-corpuscles. It seems to form metastatic abscesses only under exceptional circumstances, such as when injected directly into the blood. Otherwise the abscess remains strictly confined to the seat of inoculation in rabbits, white rats, and gray mice.

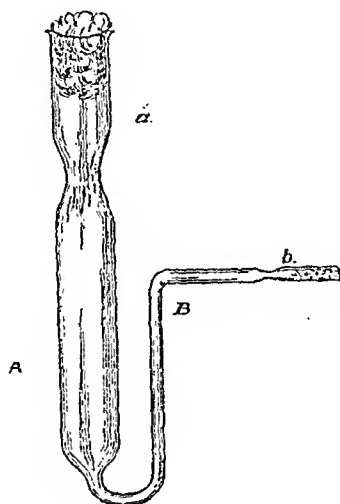
My investigations of tetanus, which led to the finding of the above organism, are not yet complete, but I have obtained the organism in pure cultures from different specimens of earth and also from a case of human tetanus; this is perhaps worth a preliminary report.

Dr. Theo. B. Burnett, who was working with me in 1889, succeeded, by Kitasato's method, in isolating from garden earth a bacillus which I could in no way distinguish from the tetanus bacillus in cultures or under the microscope; but which did not produce the disease upon inoculation in rats and mice. Dr. A. T. Bristow, also working under my direction, succeeded in isolating an organism which behaved in the same way. These two gentlemen were unfortunately prevented from continuing their work. They used solid cultures for the most part, and I think the reason we were unable to produce the disease with these cultures is that we did not inoculate sufficient amounts.

The method employed in all cases was that recommended by Kitasato, viz.: An animal (I have used exclusively white rats, and gray and white mice, for this purpose) was inoculated at the root of the tail with several pinches of the forceps of garden earth, and as soon as tetanus developed the wound was opened, and some of the secretion was

smeared upon an oblique agar tube. This tube was placed in the incubator for forty-eight hours. It was then placed in a water-bath at 80° C., for from twenty minutes to three-quarters of an hour. This heated tube was used to inoculate a tube of melted agar, from which the customary dilutions were made as in making plates. The contents of each of the tubes so inoculated were poured into a modified Liborius's apparatus,¹ shown in the cut (Fig. 3), through a sterilized funnel. The small

FIG. 3.



tube *B* of the apparatus was attached to a hydrogen generator, and hydrogen bubbled through for ten or fifteen minutes, until all the oxygen was driven out. Without stopping the flow of hydrogen the larger tube was quickly sealed off at *a*, and then the smaller tube at *b*. These sealed tubes were then put in the incubator, and as soon as colonies appeared the tubes were carefully cut open, and deep stab cultures were made from isolated colonies. I prefer to make deep stab cultures as follows: An ordinary tube of agar or gelatin is inoculated in the usual way, and the melted contents of another tube poured in on top. All contamination is usually avoided by heating the mouth of the tube from which the medium is poured, and by having the medium as hot as possible. In this way I usually obtain pure cultures.

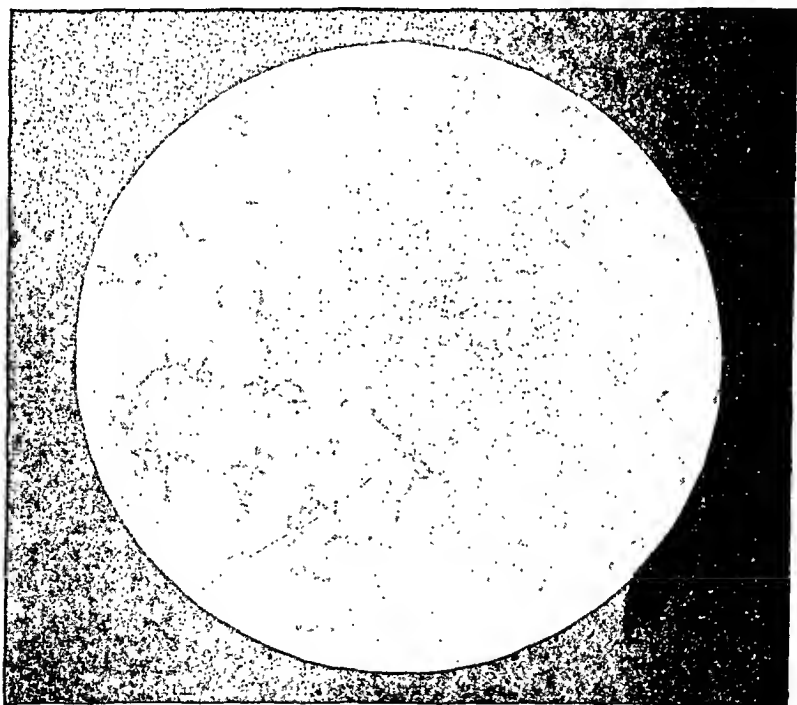
As will be seen from the photograph (Fig. 4), the organism I have obtained does not differ under the microscope from the organism described by Kitasato,² and it also agrees with my recollection of the organism in preparations shown me by Nicolaier, who first described

¹ Dr. Paul Liborius: "Beiträge zur Kenntniss des Sauerstoffbedürfnisses der Bakterien" Zeitschrift für Hygiene, Bd. i. p. 115, 1886.

² Dr. S. Kitasato: Ibid.

the organism. The behavior in cultures tallies with Kitasato's description. But ordinary inoculations, as usually practised upon animals, I find often unsuccessful—for the reason, I think, that in this way not enough of the material is introduced. I am very often unsuccessful with solid cultures, and when I have succeeded it has been only where large lumps of the culture were introduced. Inoculations from liquid cultures are more satisfactory. In agar cultures, the liquid which separates out of agar, when the latter solidifies, and which sooner or later becomes filled with tetanus bacilli, often acts very promptly, even in small quantities. The age of the culture does not, invariably at least, increase the virulence; for some of the most promptly acting cultures are less than twenty-four hours old. My experiments were confined to white rats, white and gray mice, and rabbits.

FIG. 4.



I have only once found the organism at the seat of inoculation, or elsewhere, where pure cultures were used, after the death of the animal, and that was deep in the tissues at the seat of inoculation in a mouse that died forty-eight hours after inoculation.

I have had two very singular results, which are worth special notice, as I find no exactly similar cases noted in the literature. One was in a rabbit inoculated with a pure bouillon culture, cultivated in the incu-

bator in hydrogen. Three days after inoculation the leg nearest the seat of inoculation became stiff and somewhat extended. A few days later all the symptoms of tetanus set in. The slightest disturbance brought on spasms. The animal was kept in a quiet, dark place, but even the careful introduction of food into the cage brought on violent spasms. This condition lasted two or three days, and then rather suddenly the symptoms abated, except the stiffness in the leg. Except this, the animal was apparently well, and remained so three weeks, when it was found one morning in a spasm; all the other symptoms returned also, and the animal died. The culture with which this animal was inoculated afterward killed a mouse very promptly.

I also have a similar case in a gray mouse which was inoculated with the cloudy water in an agar culture. Two days after inoculation the left leg was perfectly stiff, and the tail was bent over to the left side. The toes of the affected leg were all stretched out and rigid; the animal had no control of the leg or tail. There was also decided pleurothotonos to the left side. These symptoms have now disappeared, and the mouse is at this time alive—ten weeks after inoculation. The subsidence of the symptoms in this case was more gradual than in the case of the rabbit. The culture in this case also killed a rat promptly.

Through the courtesy of Professor J. M. Van Cott and Dr. William E. Butler I was able to obtain cultures of the tetanus bacillus from a case of tetanus in a human being. The case was one of a boy who had fallen from a tree and broken his wrist. It was a compound fracture with earth ground into it. Inoculations from the wound and spinal cord produced tetanus in white mice. Cultures were obtained from the mice inoculated from the wound. The cultures do not differ from those obtained by inoculating rats or mice with garden earth.

I am indebted to Dr. C. N. Hoagland for the photograph used in Fig. 4, which he kindly made from one of my preparations. Dr. A. T. Bristow rendered me valuable aid with the photograph used in Fig. 1.

REVIEWS.

THE PRINCIPLES AND PRACTICE OF MEDICINE. FOR THE USE OF PRACTITIONERS AND STUDENTS OF MEDICINE. By WILLIAM OSLER, M.D., Fellow of the Royal College of Physicians, London; Professor of Medicine in the Johns Hopkins University, and Physician-in-Chief to the Johns Hopkins Hospital, Baltimore; formerly Professor of the Institutes of Medicine, McGill University, Montreal, and Professor of Clinical Medicine in the University of Pennsylvania, Philadelphia. Pp. 1079. New York: D. Appleton & Co., 1892.

THE publication of few books of recent times has been awaited with so much interest as that of the present volume, and few works upon medicine have so well satisfied those who consulted their pages. Those who had the privilege of personal experience of Dr. Osler's work in medicine have now the advantage of this work in constantly available form, and those who know its author only through his writings, prize most of all this concrete expression of his knowledge and experience.

A dedicatory tribute to the memory of his teachers gives evidence of the author's appreciation of the value and responsibility of the relation of teacher and pupil. He strikes the key-note of his own methods in medicine in the Platonic statement which says "that this is an art which considers the constitution of the patient, and has principles of action and reason in each case." He then proceeds at once to the discussion of the specific infectious diseases, and first of these, typhoid fever. His treatment of this subject is a fair illustration of his method in others. The definition and history are followed by etiology, and then comes a description of the specific germ and its modes of conveyance. He claims for Gerhard, of Philadelphia, the great honor of having first clearly laid down the difference between typhus and typhoid, in this Journal. A special microörganism is said to be constantly associated with typhoid fever, and drinking-water is recognized as its most common vehicle. The morbid anatomy of the disease is considered with reference to sixty-four autopsies conducted by the author, and also the records of two thousand at Munich. It is rare to find a more satisfactory picture of disease than that afforded by these pages. Charts illustrating the usual data, and also the variations in the blood in this condition, are further given. In treatment the first importance is laid upon careful nursing and regulated diet. Alcohol should be administered for definite indications only. The value of the Brand method of combating hyperpyrexia is recognized, but the author sympathizes with those who designate it as entirely barbarous. In private practice, it is said not to be feasible; packing and sponging, however, are available. Antipyretics were abandoned by the author some years ago. Antiseptic medication has

proven useless in Dr. Osler's experience. For tympanites, turpentine may be useful in the milder cases, but not in severe ones, and its routine administration is useless practice. Constipation is thought to be harmless, and the calomel treatment has not proven useful. In hemorrhage from the intestine the patient may be spared the usual styptic mixtures. Where perforation occurs during convalescence, laparotomy is advised, but not in the second or third week of the disease.

In discussing diphtheria, we are interested to know the author's opinion regarding methods of treatment; reliance is placed upon stimulants and feeding; the perchloride of iron has been found reliable, although the same cannot be said of the bichloride of mercury, or calomel, which have been recently recommended.

A happy illustration of the author's clearness in definition is found in his statement of what constitutes septicaemia, and in what consists pyæmia. The former is a general febrile infection without foci of supuration, which results from the absorption of toxic materials produced from bacteria. Pyæmia is a general disease characterized by recurring chills and intermittent fever, and the formation of abscesses from the contamination of the blood by products arising from a focus contaminated by the bacteria of suppuration.

In malaria, the organisms found in the blood are thought to be parasitic, and there is no evidence to show that they are ever present in any other disease. Due acknowledgment is given to the Pasteur treatment of rabies, and the death-rate is acknowledged to have been reduced to about $\frac{5}{100}$ of 1 per cent.

Among the best portions of the volume is that devoted to the consideration of tuberculosis, and we are interested to know that the author regards scrofula as tubercle, because it has been shown that the bacillus of Koch is the essential element. The agents through which tuberculosis gains access to the organism, and the manner of its invasion and growth, are comprehensively stated, while the morbid anatomy and histology of tuberculous lesions form one of the most interesting and valuable writings upon the subject. The advantage of microscopic examination of sputum is because we determine in this manner whether the process in the lung is tuberculous, and whether softening has occurred, the presence of bacilli being an infallible indication of tuberculosis. The clinical consideration of tuberculosis is comprehensive and exceedingly interesting, embracing the study of all the tissues of the body as affected by this disease. We are interested to know the author's valuation of tuberculin: In internal tuberculosis and in lupus, it may be curative; in pulmonary tubercle, it should be used with the greatest caution, and omitted where fever and much consolidation are present. The author considers that it will be several years before we can speak with precision of the true position of this remedy.

Passing from the section on tuberculosis, we find that upon infectious diseases of doubtful nature, and here is included rheumatic fever; omitting the discussion upon etiology and morbid anatomy, we find that the author's observations lead him to prefer the alkaline treatment, the salicyl compounds being useful to relieve pain, the combination of the salicylates with the alkali being probably the most satisfactory. The section upon cancer of the stomach and other gastric disorders furnishes a further illustration of the author's pathological knowledge and lucid reasoning.

On the disputed topic of the treatment of appendicitis, the medical

treatment is comprised in rest, opium, and enemata; saline purges are strongly deprecated; three-fourths of all cases are considered surgical affections, and the most important function of the physician is to say whether the case is suitable, and when the operation should be performed. We are told that operation is indicated in all cases of acute inflammatory trouble in the cæcal region when the general symptoms are severe, whether tumor is present or not. In cases where a definite tumor is present, the indications are less clear. When small, such tumors often disappear spontaneously; while, on the other hand, these cases frequently terminate by perforation and fatal peritonitis. In recurrent appendicitis, it is best to wait; in general, the physician must be guided somewhat by the character of the surgical skill available; cases should be given to modern operators with safe methods. In the treatment of peritonitis in non-operative cases, salines are not approved; operation is allowed in acute purulent peritonitis, as the prognosis is so bad that any chance should be given to the patient.

We are further interested in Dr. Osler's writing upon pneumonia, and here we find the same clear and comprehensive study of the disease which characterizes the other portions of the book; as regards treatment, pneumonia can neither be aborted nor cut short by any known means. Symptomatic treatment is indicated; in robust subjects, venesection may be done to advantage early. Fever alone in pneumonia is not hurtful. The best antipyretic is cold, applied by ice-bags. No advantage has been observed from the use of medicinal antipyretics, including quinine. Alcohol is of value in preventing cardiac weakness, and should be given when the heart-sounds, particularly the second pulmonary, begin to lose force. Of medicinal agents, strychnine is one of the best. Arterial sedatives other than bleeding are not considered of value. We do not find mention of the inhalation of oxygen in pneumonia, as recently recommended.

The same knowledge of pathology and lucid expression characterizes other portions of the work. The pathology of arterio-sclerosis and disorders of the heart furnish most interesting reading, while the subject of anæmia is illustrated by valuable charts.

The author divides disease of the kidneys into acute and chronic Bright's disease, amyloid degeneration, pyelitis, hydronephrosis, renal calculus, cystic disease, and peri-nephric abscess. As regards the prognosis of chronic Bright's disease, it is stated that "interstitial nephritis is compatible with the enjoyment of life for many years, and that increased tension, thickening of the arterial walls, and polyuria, with a small amount of albumin, neither doom a man to death within a short time, nor necessarily interfere with the pursuits of an active life so long as proper care is taken." Those interested in examining for life insurance will find this statement a useful basis for action.

Diseases of the nervous system are next considered, and diseases of the cranial nerves, of the spinal nerves, and of the cord are treated in detail. The bloodvessels of the spinal cord next receive attention, and then its acute and chronic affections.

Then come diseases of the brain, in which the topical diagnosis of cerebral lesions is fully stated, after which hemiplegia and diplegia in children receive consideration. Meningitis and hydrocephalus follow; general and functional diseases of the nervous system close this portion of the volume.

The next section is devoted to disease of the muscles; followed by intoxications, the whole concluding with diseases due to animal parasites. An adequate index concludes the volume.

It may be said, to the credit of the author, that this is not the book to be purchased by those physicians whose conception of medicine consists in giving the patient a drug; for those, however, who wish to know the facts of modern medicine as such are attained by skilful observation and logical deduction, this is the most interesting and valuable book in the English language. Its teachings will prove discouraging to polypharmacists, and those whose claim to the respect of their fellow-men consists largely in their ability to shift and trim their sails to some modern breeze of therapeutic novelty; to those who are wedded to the regular dosing of past medicine, the author will appear somewhat of an iconoclast, and many of the therapeutic idols of years ago will suffer at his attack; but to those who have had the advantages of the cosmopolitan study of medicine, his book will prove a delightful reminder of many things seen and heard abroad. To his students the book will represent as well as possible a valued friend, while Dr. Osler has laid those in the profession, who find enjoyment in the study of medicine upon a rational basis, under lasting obligation in the present volume.

E. P. D.

TRAITEMENT DES MALADIES DE LA PEAU, AVEC UN ABRÉGÉ DE LA SYMPTOMATOLOGIE, DE DIAGNOSTIC, ET DE L'ÉTIOLOGIE DES DERMATOSES. Par le DR. L. BROCQ, Médecin des Hôpitaux de Paris; la partie pharmacologique a été revuë par M. L. PORTES, Pharmacien-en-chef de l'Hôpital Saint-Louis. Deuxième édition, corrigée et augmentée. Pp. 894. Paris: Octave Doin & Cie., 1892.

DISEASES OF THE SKIN. By L. BROCQ, M.D.

WHEN Dean Swift wrote, *à propos* of France, that "there is scarce a corner of Europe whose beams of light are not crossed and interchanged with others," he surely did not suspect that for nearly half a century after Rayer published his great work on *Diseases of the Skin*, the medical men of that nation would be content with the rays that streamed from the Saint-Louis hospital of their famous metropolis, and would merely blink at all others, if they did not actually close their eyes against them. So it was to be, however, and the results might have been anticipated.

At first we sat reverently at the feet of their masters and learned much; then there came a time when we learned less than elsewhere; and then followed a period when we bought their books merely to see if there was still anything to be gleaned in the old straw they continually re-threshed.

Last of all, as the century is closing, dawns a different day. The letter of the old masters is still adored (for be it said in praise of the French, they never forgot the honor due their heroes), but a new and younger estate has risen. They see that no more forever can one assign metres to science by the geographical lines of latitude and longitude. The masters of this day must be in a sense denationalized.

Our author is of this new and, for France, unique type. He has written a comprehensive treatise in a truly catholic spirit. This second edition, with its corrections and additions, strengthens his position as an author of international repute. De Roussel, in 1779, won the prize offered by the College of Medicine of Lyons, for a treatise on the causes, symptoms, and different varieties of "dartres," establishing then to the satisfaction of the faculty no less than nine different forms. The insidious doctrines thus formulated have absolutely governed the minds of his countrymen (and those of other nations choosing to accept this domination) for the best part of the century. Only one who has given some attention to the absolutism of these ideas can appreciate sentences of this sort from Brocq's pen: "The word 'darter' has at the present time no precise signification The word 'herpetides' was once given by certain authors to cutaneous eruptions which they thought to be due to a diathesis called by them 'herpetisme' . . . 'arthritides' is a name given by certain authors to cutaneous eruptions under the dependence of 'arthritisme'" These brief sentences demolish the flimsy and artificial substructure of a great part of dermatology in France erected with infinite toil by its best minds since De Roussel first wrote.

But we need not revert to such distant periods to learn how closely our young savant follows the footsteps of the pathfinders. Of psoriasis, which first saw the light after Darier, Thibault, Bollinger, and Neisser were incited to their labors by the example set by Koch, it is here written, that its "theory" is "menacée de mort," and "its conception will hereafter probably possess only an historic interest!"

Turning again to the affections which more lately have attracted attention we find ample space given here to the "contagious vulvitis of young female children," a disorder of practical importance to every practitioner. Here is also a full and rich description of the several forms of what is best known in this country as "leucoplakia buccalis" but which (following Vidal) is here termed leucoplasie. Twenty closely printed pages are devoted to an exhaustive discussion of the several manifestations of this disorder, recognised by nearly a score of names in different countries, which may begin as a "smoker's patch" in the mouth of a dyspeptic, and terminate in an epithelioma, even as here shown (with exceeding rarity in the sex least disposed to such troubles), in the vulva of women. He admits that it is difficult to distinguish its lesions from those of lichen planus of the mucous surface (obviously the most serious problem to be here solved). In the differential diagnosis stress is laid upon the discovery in lichen planus of sublingual patches, upon the existence of whitish nodules from which as a centre pass rays of interlacing whiteness, and lastly upon the efficacy of arsenic in the course of a systematic treatment. It must be confessed that this is not as definite as one could desire.

There are very few questions lately raised in the field of dermatology, upon which our author does not at least touch. He covers, it is true, with too scanty a paragraph, Breisky's "kraurosis of the vulva," a disorder of which a single American author has been able to collect no less than thirty-five instances; and one looks here in vain for mention of Souques's and Charcot's "cutaneous geromorphism," an affection producing those odd changes in the skin of a young girl which cause her to resemble an old woman. Laurand's case first came under obser-

vation in 1881, and by this time one would suppose that it had attracted some attention in the country of the distinguished professors of the Salpêtrière.

Brocq's work is a mine of useful information to those who are interested in his fruitful themes. It possesses the advantage of an alphabetical arrangement of subjects, a classification which our American Dermatological Association was pleased to adopt, for provisional purposes, at its late meeting in Washington.

J. N. H.

ON THE SIMULATION OF HYSTERIA BY ORGANIC DISEASE OF THE NERVOUS SYSTEM. By THOMAS BUZZARD, M.D. Lond., Fellow of the Royal College of Physicians in London; Fellow of King's College, London; Physician to the National Hospital for the Paralyzed and Epileptic. London: J. & A. Churchill, 1891.

THE intimate blending of hysteroid manifestations with those of organic nerve-disorder, especially when the latter is in its incipency and yet without characteristic symptoms not closely simulated by a functional ailment, renders a certain differentiation well-nigh impossible. This is a matter of grave concern, in view of the usual insusceptibility of cure of developed organic, central neural affections. If our therapy is to be of permanent avail in these, it must be applied at the earliest possible period, before irremediable structural alterations occur. Unfortunately, the absence of decisive symptoms leading to the prompt recognition of many of the most incurable diseases of the nervous system renders this often impossible. Therefore, the presentation of any facts tending to advance our knowledge of the semeiology of these merits the closest attention.

This little volume of Dr. Buzzard's may be familiar to many as a development of the author's presidential address (Neurological Society of London, 1890), abstracts of which have been published, which deals with the clinical aspect of the simulation of hysteria in a manner so instructive that we cannot forbear directing attention to several interesting facts contained therein, of great practical importance but apparently not generally known. The first part of the volume is devoted to a consideration of a hitherto undescribed variety of primary myopathy, somewhat perplexing of detection unless on the watch for it, characterized by a progressive atrophy commencing in, and often limited to, the ilio-psoas muscle, causing a form of paraplegia the specific manifestation of which is volitional incapacity in the affected muscles, especially shown by loss of ready thigh- and trunk-flexion, hence by difficulty in climbing, or absolute inability to mount steps, or to lift the body with the feet so as to stand upon a chair without assistance. This restricted myopathy must be of more common occurrence than we are aware, judging from the number of cases Buzzard has encountered. The limited paraplegia it occasions, unaccompanied as it is by other discoverable disorder of muscle or nerve, or by alteration in reflexes or electrical reaction, may be easier of recognition than of interpretation, but also, we fear, more facile of interpretation than of amelioration, so that less

importance from the standpoint of therapy, at least, may be attached to its diagnosis than to that of forms of central nerve disorder less insusceptible of remedy in the earlier stages. Among these may be placed disseminated sclerosis, the character of the symptoms in the incipency of which, their frequent ready response to treatment, and their curious subsidence, often entirely without medication, indicates a more or less spontaneous tendency toward cure, before the disease has progressed to actual destruction of important parts.

Buzzard especially deals with the differential diagnosis of insular sclerosis in the early stage—than which no disease is more apt to be overlooked, from hysteria or a simulated ailment, occurring, as he has frequently observed it, in young, emotional females, in whom hysterical symptoms are often closely united with those indicating the organic malady. It is especially important to distinguish those that constitute the latter, that they be not misinterpreted. Many which formerly have been rather viewed as of emotional source, Buzzard now positively regards as pointing toward incipient disseminated sclerosis, in which, probably, the presence of patches of subacute interstitial myelitis accounts for the complexus observed, such as sudden transitory motor or sensory loss in a limb, or of sight in an eye, a narrowly localized atrophy of a muscle-group with electrical alterations, persistent rheumatoid pain, or the knee-jerk in great excess—this last, of course, alone not being of any great diagnostic value. It is especially a tendency toward the repeated recurrence of these, when affecting young women otherwise apparently healthy, together with the non-existence of hysterical indications, such as absent plantar reflex without symptoms of myelitis of the sacral segments, or of neuritis, to account for its disappearance, the presence of flaccid paraplegia with normal electrical response, and the many other manifestations generally regarded as demonstrating hysteria, which permits a differentiation.

It is of the highest importance to recall that symptoms of hysteria and of organic nerve disease may be intimately blended. Then, to obviate error, most imminent under these circumstances, we have only to recall that a single symptom, if clearly indicative of a structural affection, even though commingled with a multitude of those characteristic of an emotional ailment, must outweigh the latter in a decision about to be rendered against serious disease.

The difficulty in diagnosing between hysteria and graver nerve troubles is sometimes stupendous; *characteristic* symptoms of the latter may be entirely wanting, yet something in the morbid complexus, not definite enough for analysis, may intuitively suggest a source for the ailment deeper than the emotions. Then time alone permits a positive opinion. It may be of interest, in this connection, to note that Buzzard resorts to the method of treatment of our distinguished countryman as an aid in separating the functional from the organic. He regards the Weir Mitchell treatment so specific in its effects in cases of pure functional nerve derangement that its diagnostic application "may be fairly likened in some measure to one of those experiments which enable us to decide some question in natural science."

Dr. Buzzard's book is especially valuable through its richness in clinical histories of cases followed to a finality; several are detailed in which the presence of one or more symptoms regarded by Buzzard as indicative of beginning disseminated sclerosis caused him to diagnosti-

cate the latter, though this view was questioned by other consultants. These cases subsequently developed this disease in its typical form. A most striking instance of this is that of an apparently hysterical girl, who under treatment seemingly recovered, and, with occasional relapses, was thought to be in good health several years afterward, though she then had occasional attacks of slight localized paresis and squinting which courses of arsenic relieved. This girl had been bedridden for two years with advanced disseminated sclerosis when Buzzard again heard of her after a period of fourteen years.

We feel bound to take exception to at least one statement in this otherwise excellent book, which, through its misleading character, must be regarded as mischievous. In remarks on incontinence of urine due to organic cord disease, it is asserted that distention of the bladder never occurs, the urine constantly dribbling away as secreted; in other words, that a condition of *simple* incontinence is always present. It should rather have been stated that this is the case in cord disease *only* when the lumbar segments, containing the vesical centres, are the seat of the lesion. When, however, the disease is above these, as in a transverse cervical or dorsal myelitis, paralysis of the bladder is of another sort; then, in place of a simple incontinence that of "intermittent" or "overflow" results, in which, though the reflex paths for micturition are intact, loss of voluntary control soon leads to atony with retention. It is of prime importance to early recognize which variety of incontinence exists, since with the last, though the urine seems constantly to escape, over-distention, with secondary bladder, ureteral, and kidney disease will result—a not uncommon cause of death in spinal disease according to Gowers. Simple incontinence, on the contrary, is unattended with danger.

D. D. S.

INDIGESTION: A MANUAL OF DIAGNOSIS AND MODERN TREATMENT OF THE DIFFERENT VARIETIES OF DYSPEPSIA. By GEORGE HERSCHELL, M.D. 8vo., pp. 201. London, 1892.

THIS work belongs to the class of small handbooks, so many of which devoted to almost every subject in medicine have appeared in recent years.

The author opens with a very good *résumé* of the processes of normal digestion, stating briefly and concisely the part performed in turn by the digestive juices, the time, relatively to the meal, at which each acts, and the changes effected. With this physiological standard as a basis he systematically reviews the physical conditions in indigestion incident to the age of the patient, to heredity, to general and local vascular and nervous disturbances, to reflex irritations, to chronic diseases and depraved blood states, to improper personal hygiene, to improper foods, and to local diseases of the alimentary canal.

He takes up the symptoms of indigestion analytically, classifying and explaining them as nearly as he is able with our present knowledge of the normal and abnormal products of digestion, and of the accidental, chemical, and fermentation processes that may occur in the alimentary canal.

A short chapter is devoted to the interpretation of physical signs, the

technicalities of physical investigation, and the examination of secretions and excretions. For convenience in diagnosis the author classifies the clinical varieties of indigestion, and treats of them etiologically and symptomatically.

In the last chapter devoted to treatment he discusses briefly the hygienic methods of improving the functions of the alimentary canal, the regulation of diet, the use of drugs and artificial digestive ferments, and indicates the especial applicability of the various measures in the individual varieties of dyspepsia.

The work is not an exhaustive treatise, but will be found useful by those desiring a small, well-arranged book of reference embodying the views of standard authors, and the information culled from the recent current literature.

F. S. J.

THE COMPARATIVE ANATOMY OF THE DOMESTICATED ANIMALS. By A. CHAUVEAU. Revised and enlarged with the coöperation of S. ARLOING. Second English edition, translated and edited by GEORGE FLEMING, C.B., LL.D., F.R.C.V.S. With 585 illustrations. New York: D. Appleton & Co., 1891.

THIS volume of more than a thousand pages is a translation of the fourth French edition of Professor Chauveau's excellent book. Since the appearance of the first English edition, eighteen years ago, the French work passed through two successive editions. Prior to this period there was no text-book of the anatomy of the domestic animals in the English language, and the student and practitioner were obliged to remain contented with the old work of William Percival on the *Anatomy of the Horse*. The first edition of Fleming's translation very acceptably filled this void, and, although the book was in many respects incomplete, it very deservedly at once became a standard text-book.

The edition now before us is carefully revised, and in many parts rewritten and new matter inserted. The comparative anatomy of the ass, mule, rabbit, and camel, as well as over one hundred and thirty illustrations, have been added. The author employs the horse as the type, and describes the various regions in detail. Following each region is a review of the comparative differences in the anatomy of the ass, mule, ox, dog, rabbit, sheep, goat, hog, and camel. Contrary to many other anatomists, he completes the description of an entire apparatus before taking up another. Numerous other additions consist of more details on the histology of the tissues, the archetype of the hand of the domestic animals, which is fully explained, the brain, etc. The details of the classification of the subject-matter have been slightly altered in conformity with our own views. Larger type has been adopted for the more important parts and smaller type for that of less moment. The general execution of the work also is good. An extensive index renders the reading-matter easily accessible to the reader.

The *Anatomy of the Domesticated Animals* is, besides, especially valuable as coming from the pen of such a careful and experienced scientist and investigator as Professor Chauveau, and is indispensable to the

student, the veterinarian, and the comparative anatomist, who will find it an excellent guide and a useful book of reference. We can conscientiously recommend it as a text-book, and its success has already been demonstrated in the past.

S. J. J. H.

AGE OF THE DOMESTIC ANIMALS: BEING A COMPLETE TREATISE ON THE DENTITION OF THE HORSE, OX, SHEEP, HOG, AND DOG, AND ON THE VARIOUS OTHER MEANS OF DETERMINING THE AGE OF THESE ANIMALS. By RUSH SHIPPEN HUIDEKOPER, M.D., Veterinarian, American Veterinary College. Illustrated with 200 engravings. Philadelphia: F. A. Davis.

The Age of the Domestic Animals, a volume of two hundred pages, by Professor Huidekoper, marks an important step in this branch of veterinary science. "The author has attempted to prepare such a book as he feels would have been of interest and service to himself in his association with animals as a layman, and would have aided his studies and appreciation of the anatomy of the teeth, dentition, and the means of determining the age."

Heretofore, the English-speaking veterinarian and lover of the horse had no systematic treatise on this subject at his command, and what writings existed were principally confined to pamphlets and charts on the age of the horse, that of the other domestic animals being but little treated. The appearance of this work is, therefore, very timely. The author describes the dentition, the structure of the teeth, the duration of the life of the domestic animals, the characters furnished by the teeth, the horns, and other parts as indicative of age; irregularities and malformations of the mouth and teeth, the various changes in the conformation of the body and the internal organs from birth to old age, as well as the fraudulent means practised upon the teeth to deceive the ignorant and inexperienced as to an animal's age. He makes reference to the latest English, French, and German writings in so far as they agree with his own personal views. The illustrations, which are numerous and excellent, demonstrate to the eye the various changes in the teeth, the result of age, deformities, and bad habits. The literature is good, and the text large and clear. The publisher's work also is well executed.

This volume, on so important a subject and from such a well-qualified writer as Prof. Huidekoper, cannot but meet with success, and his object has thus far been accomplished. The veterinarian, who should be well acquainted with the age of the domestic animals which he is constantly required to handle, will find this a valuable and instructive book.

S. J. J. H.

A TREATISE ON PRACTICAL ANATOMY. By HENRY C. BOENNING, M.D. Philadelphia: F. A. Davis, 1891.

THE work is divided into ten sections, and contains one hundred and ninety-eight wood engravings taken from standard works, but to none

of these is the credit given, as stated in the preface. There is but one illustration in the minute anatomy of bone, which to the student of anatomy would give but a very obscure idea of this structure. The descriptions of the bones are faulty and misleading. For instance, the olecranon is as "a large cuboidal process of bone, which projects upward from the shaft. On its anterior aspect is a deep hemispherical cavity—the greater sigmoid—for articulation with the humerus." This a good sample of the description of the bones, which, to any student of anatomy, is not what is looked for in a work pretending to be a "text-book" or a "treatise" on such a subject. The ligaments are given in a semi-tabulated form—the bones forming the joints, the ligaments that unite them, with their origin and insertion; but the function performed by the joints is entirely ignored. There is no classification of the joints as each one is given, which is always necessary to a thorough understanding of the subject, from a student's point of view.

The muscular system is similarly arranged as in the preceding section, giving in a meagre way the origin and insertion of the muscles, with the name of the nerve which supplies it. Their functions and the topographical anatomy are entirely omitted, both of which are important factors in fixing the utility of the part to the student, for application from either a medical or surgical standpoint. In the vascular system the direction of the bloodvessels is described, but their surroundings have been entirely omitted. It is not sufficient that a student should know the names of the bloodvessels, their branches, and the parts to which they go, but he must know their course and their relations, not only to each other, but to muscle, nerve, and bone, none of which are here given.

The text treating of the nervous system is better illustrated than other parts of the work.

It is needless to write further of the remaining portions of this work. Very little space is devoted to the lymphatic system, which now all writers and teachers are bringing into prominence, from its important bearing upon practical medicine and surgery.

In short, the work appears to have been written as a compend, under the title of a "text-book," which it is not, for those preparing for examination; but woe to him who puts faith in such works, if thorough examinations are required for graduation.

The author seems to consider that the anatomy of the human body is a feat of memory, and not the association of parts to parts, which indicates their function and utility—the acquisition of such knowledge, systematically arranged, fixing itself indelibly upon the mind of the student.

A. H.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF
REYNOLD W. WILCOX, M.A., M.D.,
PROFESSOR OF CLINICAL MEDICINE IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND
HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

THE TREATMENT OF INEBRIETY.

DR. CHARLES L. DANA has made a very careful study of 614 male alcoholics treated at Bellevue Hospital. He believes that strychnine has a certain degree of specific effect in inebriety, and in alcoholic intoxication. In acute alcoholism, when the system is overwhelmed with the poison, one-sixtieth of a grain every two or three hours; in the chronic form, it should be administered in good doses for a considerable time. In ordinary acute delirium of alcoholism, twenty to forty grains of chloral, repeated in smaller doses in two or three hours, and combined with digitalis and strychnine, is the safest and surest means of controlling the excitement and securing sleep. A preliminary laxative, and a careful diet of hot milk and beef-tea with red pepper, should be insisted upon. In febrile delirium tremens, depressants must be used with care; cold baths or cold wet-packs, with friction, must be applied every two or three hours while the temperature remains high. Hypodermic injections of morphine are rarely needed, and he does not advise them.—*New York Medical Record*, 1892, No. 1115, p. 309.

[This is a thoughtful paper, based upon the study of a large number of cases, and written by one of a judicial temperament, and unbiased by narrow theoretical conclusions.—R. W. W.]

A NOTE ON COCAINISM.

In the *Journal of Mental Science*, 1892, No. 125, p. 195, DR. CONOLLY NORMAN sounds a timely warning. He believes that cocaine is more seductive than morphine; it fastens upon its victim more rapidly, and its hold is at least as tight. The especial dangers are: it is particularly treacherous; it produces early mental break-down, both in the moral and intellectual spheres;

it is intensely toxic, bringing about destructive tissue change after a comparatively short period of abuse; it is probably the most agreeable of all narcotics, and therefore the most dangerous and alluring. In the future, as Erlenmeyer says, it may become the third great scourge of the human race (alcohol and opium being the first and second).

SOMNAL: A CLINICAL AND EXPERIMENTAL STUDY.

DR. O. M. MYERS has conducted some very thorough experiments with this valuable hypnotic, and records his results in the *New York Medical Record*, 1892, No. 1114, p. 286. He concludes:

1. Locally, it is non-irritant, exerting rather a stimulating effect upon the mucous membrane of the stomach.
 2. In therapeutic doses it exerts no appreciable physiological effect upon the heart, and may be regarded as safe.
 3. Therapeutic doses have little or no effect upon the pulse-rate.
 4. Ordinary doses cause the respiration to become slow and full.
 5. As, in therapeutic doses, sleep is induced without perceptibly affecting any other portion of the economy, it is fair to conclude that it acts quickly and primarily upon the cerebrum.
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THE TREATMENT OF NEURASTHENIA BY NERVOUS TRANSFUSION.

M. CONSTANTIN PAUL presented an interesting communication at the meeting of the French Academy on February 16th (*Bulletin de l'Académie de Médecine*, 1892, No. 7, p. 202). The material used was the brain of the sheep (gray matter) cut in small pieces, macerated for twenty-four hours in five times its weight of pure glycerin. An equal quantity of water is now added, and it is filtered in the apparatus of d'Arsonval under a pressure of forty to fifty atmospheres, which is obtained by the liquefied carbonic acid, which not only filters the mixture but sterilizes it as well. The filtrate is colorless, transparent, of specific gravity of 1080 to 1090, neutral in reaction, and contains no formed elements. It can be kept unchanged for ten days. Injections are made in the skin of the abdomen or in the dorsal-lumbar region; the skin is sterilized by strong phenic acid; anæsthesia, if necessary, is obtained with chloride of ethyl; the syringe and needle are sterilized by boiling water and strong carbolic solution. The dose is about seventy-five drops. He has employed this injection in three cases of neurasthenic chlorotics, three of classical neurasthenia, one of permanent bradycardia, four of tabes dorsalis. He concludes that the first effect is a sensation of power and *bien-être*; the muscular weakness rapidly diminishes; the rhachialgia and spinal hyperæsthesia disappear after several injections; so do also the neurasthenic headache and the insomnia; the functional impotence of brain disappears to a degree; the general condition improves; the sexual impotence notably improves, but only in the simple neurasthenias. This method of treatment is, as says Trousseau, a true neurasthenic tonic. Borrowing a comparison from electricity, the neurasthenic is one whose nervous system is an accumulator impossible to charge. The neurasthenic eats, but he cannot transform his nourishment into a force of which he can freely avail himself; he is tired at the least

expenditure of muscular or intellectual energy. The treatment allows him to use his stored-up energy, and at the same time to increase his weight and enrich his blood. It improves the condition of the patient better than iron, arsenic, phosphates, opium, or alcohol. Its action is more rapid and more sure than that of hygiene alone, of suggestion, or even of electricity.

THE TECHNIQUE OF INTERSTITIAL IODINE INJECTIONS IN THE TREATMENT OF GOITRE.

DR. DUGUET has used this method since 1874 (*Journal de Médecine*, 1892, 4e. cahier, p. 129). He concludes that the recent fleshy goitres, occurring ordinarily in young subjects, are the ones which disappear the most easily and rapidly; the recent cystic goitres are still more easily and rapidly cured; the goitres of long standing—in general, hard, fibrous, calcareous, sometimes aneurismal—result often very favorably, at other times less satisfactorily. The solution used is one part of iodine to twelve of 90° alcohol, injected with a hard-rubber Pravaz syringe carrying a steel needle, the latter to be cleansed after each time of using with a weak solution of ammonia. In the intervals the syringe and needle are kept in a ten per cent. solution of carbolized oil. The injection is made deeply into the tumor, but only when, after making the puncture, blood does not flow during the ensuing several seconds. The injection is made slowly, watching the patient's face. For checking the cough which may be produced by the injection, after taking out the needle, the patient takes several swallows of wine. These injections are repeated at intervals of eight to fifteen days, but not during menstruation, nor in patients who suffer from albuminuria. The amount injected is seven to fifteen drops.

THE MEDICAL USE OF ETHER.

In *L'Union Médicale*, 1892, No. 4, p. 37, an unsigned paper gives an excellent résumé: 1. Subcutaneous injections, as stimulant, deep into fatty tissue; but in one poor in nerves and vessels, may result in paralysis, or even a neuritis (Arnozan and Salvat); in algid stage of cholera (Dupuy and Okounkoff), coma of typhoid, of pneumonia, in neuralgias (Kums), also in hepatic colic. 2. Inhalations in whooping-cough (with chloroform and turpentine, West). 3. By way of the stomach, in vomiting, flatulent dyspepsia, as a tænistuge, in intestinal occlusion (enemata), in lead colic (Aubry, Cornet). 4. As local application in superficial inflammation, erythema, erysipelas, in the form of spray, œsophagismus (Armaingand), in spasm of phrenic nerve (Rizoni), in chorea (Lubelski, Ferraud, Jaccoud, Fabry, De Seguy). 5. Especial use against pediculi, to dissolve cerumen, to render cod-liver oil more easily borne.

THE NEW SALTS OF CALCIUM IN THERAPEUTICS.

At the meeting of the Academy of Medicine on the 8th of March, M. GERMAIN-SÉE presented a communication upon this subject (*L'Abeille Médicale*, 1892, No. 13, p. 97, and *Bulletin de l'Académie de Médecine*, 1892, No. 10, p. 313). In order to surely introduce lime into the organism it is necessary to

prescribe the salts of calcium, the bromide, and especially the chloride, which contain more than a third of the base. The lime preparations are uncertain, because they are slightly absorbable and are but slightly eliminated by the kidneys and mostly by the intestines. The iodide and bromide of calcium are the salts to be chosen for the action of the iodine and bromine upon the system. The bromide and chloride of calcium are useful in a great number of dyspepsias and stomach lesions. It is the calcium which acts favorably upon the stomach, when one substitutes the iodide of calcium for the iodide of potassium. Both have a wonderful action upon respiration, upon the heart, and upon specific disease, but the lime salt is better borne by the stomach. There is a special indication for each of the three haloid salts of lime, but there is a common indication as a stomach remedy; this remarkable property of calcium maintains itself throughout.

LOCAL ANÆSTHESIA (ETHER-COCAINE).

DR. C. SCHLEICH has performed two hundred and twenty-four operations (five being laparotomies) under the ether-cocaine anæsthesia (*Zeitschrift für Therapie*, 1892, No. 2, S. 10). He uses one-fifth of one per cent. of cocaine in distilled water, injected endermatically into the cutis (intra-cutaneous, not hypodermatically or subcutaneous), having previously benumbed, not frozen, the field of operation with ether spray. The largest amount of solution used was fifteen syringefuls. Should symptoms of poisoning appear he would continue the operation, substituting a two per cent. solution of caffeine, a good local anæsthetic and an antidote to cocaine.

BROMIDE OF ETHYL NARCOSIS.

At a meeting of the Gesellschaft der Aerzte, in Vienna, on the 11th of last December, this subject was under discussion (DR. GLEICH, *Zeitschrift für Therapie*, 1892, No. 1, S. 1). Since September this narcosis has been employed one hundred and fifty times in Billroth's clinic, amount used one to nine drachms, the last-named amount having produced cyanosis and slight collapse in a strong patient of thirty years. Narcosis is produced in thirty seconds; awakened from suddenly; alcoholics show a brief period of excitement; vomiting in only five cases, probably from swallowing of the vapor from too hasty inspiration. Dittel reported about thirty cases without disagreeable symptoms. Von Metnitz believed that it resembled nitrous oxide gas, in that excitement, except in alcoholics, was rare; unpleasant after-effects (nausea, vomiting) are infrequent. Unlike the gas, it does not give rise to cyanosis and it does not require elaborate apparatus. Von Hacker had used it in about fifty instances; reported himself satisfied. He had used on one occasion fifteen drachms. The longest operation was eleven minutes. However, he called attention to the use of penthal by Breuer, and believed that it presented advantages over the bromide of ethyl, in that the after-effects were even less marked; complete insensibility to pain could be obtained, and yet the patient respond when called upon. The longest operation with penthal was thirty-one minutes.

A FATAL CASE OF BROMIDE OF ETHYL NARCOSIS.

From Prof. Billroth's clinic comes a warning which is reported by DR. ALFRED GLEICH, in the *Wiener klinische Wochenschrift*, 1892, No. 11, S. 167. Having successfully employed this anæsthetic in nearly four hundred instances, he records a fatal issue after the use of five drachms. The operation was multiple incision in a carbuncle in right deltoid region, and death resulted in three minutes from the commencement of the narcosis, the heart and respiration ceasing. The necropsy showed parenchymatous and fatty degeneration of the wall of both ventricles of the heart, as did the liver, and parenchymatous degeneration of the renal epithelium.

PENTAL NARCOSIS.

DRS. RICHARD BREUER and ADALBERT LINDNER have carefully studied this new anæsthetic (*Wiener klinische Wochenschrift*, 1892, No. 3, S. 46; No. 4, S. 68), using a modification of a Junker inhalation apparatus. The narcosis lasted from fortyseconds to eight and one-half minutes. In this apparatus when deep narcosis was necessary, the hand holding the apparatus became readily tired; the evaporation was so rapid that congelation of the liquid took place, and the anæsthetizer had no free hand to ascertain the pulse. Using the apparatus designed by Dr. Gleich for the administration of bromide of ethyl, these difficulties were removed, together with the obtaining of better results in a deeper and longer narcosis.

The usual precautions of chloroform anæsthesia are observed: a small quantity (a few drops) of the substance at first, but soon a larger quantity at short intervals, but always by drops, is used. The corneal reflexes are never entirely abolished, the depth of the narcosis is readily controlled, and the awakening is rarely so sudden as in bromide of ethyl narcosis. Analgesia can be secured without, however, complete loss of consciousness. The recovery is almost always uneventful. The greater portion of the inhaled pental is excreted unchanged from the lungs. It is not an irritant to skin or mucous membranes, nor is it accompanied by preliminary excitement. It is, however, more inflammable than chloroform, and the narcosis is not so deep as compared with bromide of ethyl; is less readily changed by the action of light; somewhat slower in action, but not so likely to produce vomiting.

FORTY YEARS' EXPERIENCE IN THE USE OF CHLOROFORM.

DR. LOMBE ATTHILL (*British Medical Journal*, 1892, No. 1620, p. 110), in at least five thousand cases, can recall but one death, which he believes was not due to the anæsthetic, but to the pressure of an enormous tumor upon the diaphragm, the patient being inverted on account of failure of respiration. He gives a decided preference to Junker's inhaler, and insists that the chloroform must be pure, air must be admitted with the utmost freedom, and that the administrator must devote his entire attention to the pulse and respiration. These precautions being observed, and the needful degree of anæsthesia being steadily maintained, he believes chloroform safe.

THE CAUSE AND PREVENTION OF DEATH FROM CHLOROFORM.

This perennial question for discussion by our English cousins is the subject of an able paper by DR. B. W. RICHARDSON in the *Asclepiad*, 1892, No. 33, p. 1. He believes that we employ no other narcotic that approaches chloroform for danger, a death-rate of one in two thousand administrations being really a too low estimate. The causes are in the physical or mental condition of the patient, or in the immediate surroundings (atmospherical), or in the mode and skill of administration, or in the impurity of the chloroform.

[This paper is important, because it teaches that with all precautions carefully observed chloroform is a dangerous anæsthetic.—R. W. W.]

THE METHOD OF RESUSCITATION IN CARDIAC DEATH IN CHLOROFORM INHALATION.

DR. MAAS, in the *Berliner klinische Wochenschrift*, 1892, No. 12, S. 265, offers a plea for the use of rapid compression of the cardiac region (method of Koenig) combined with artificial respiration (method of Sylvester); cites two cases in support of his argument.

THE TREATMENT OF TUBERCULOSIS OF BONES AND JOINTS BY PARENCHYMATOUS AND INTRA-ARTICULAR INJECTIONS.

PROF. NICHOLAS SENN has an elaborate paper in the *Annals of Surgery*, 1892, No. 1, p. 1. He obtains the best results from iodoform, which has an anti-bacillary effect and stimulates healthy tissues. He uses a ten per cent. emulsion in glycerin or pure olive oil by subcutaneous injection, avoiding the ethereal solution, which causes necrosis and iodoform intoxication. Tubercular abscesses and joints should be washed out with a three to five per cent. solution of boric acid before injection, the intervals of which should be one to two weeks. Improvement may be looked for not later than the second or third week. Improvement consists in gradual diminution of the contents of joint or abscess at each successive tapping, lessening of the solid contents, and increased viscosity. Moderate use of the limb is not prohibited if it does not aggravate any deformity. This method is also useful in tubercular spondylitis attended by abscess-formation, and tuberculosis of knee and wrist-joints. In open tubercular affections, incisions, scraping, disinfection, iodoformization, gauze tampon, suturing, and subsequent injections give excellent results. Balsam of Peru ranks next to iodoform, and should be used if the latter cannot be employed.

THE TREATMENT OF TUBERCULOSIS OF THE LARYNX.

A lecture by DR. GOUGUENHEIM (*Revue Générale de Clinique et de Thérapeutique*, 1892, No. 6, p. 82) gives a practical statement of the modern treatment of this grave condition. Pain is relieved by applications of cocaine, to twenty per cent. in aqueous solution, on cotton, with or without previous application of menthol. For caustic, nitrate of silver, as stick or in ten to twenty per cent. solution; chromic acid, as pencil and not in solution.

Perchloride of iron has not been used, and creasote is a painful remedy and not very sure. The galvano-cautery frequently yields good results; submucous injections of cocaine or iodoform are sometimes useful. Scarifications and ablations may sometimes be required. Aphonia is benefited by iodoform by insufflation or upon moistened cotton, and lactic acid may be of wonderful value. Creasote in five or ten per cent. solution in olive oil, injected in the laryngeal cavity by the syringe of Bachag is frequently of real service, while iodol, iodine, and salol are remedies of less value. Dyspnœa may call for tracheotomy. The general treatment consists in soothing remedies, opiates, chloral, antipyrine (which is not always well borne). Exalgine, a recent introduction to the clinic by Dr. Désiré, has relieved some very painful dysphagias.

INTUBATION FOR THE RELIEF OF STENOSIS OF TUBERCULAR LARYNGITIS.

DR. F. E. HOPKINS reports a case which was successful so far as the relief of the stenosis was concerned (*New York Medical Journal*, 1892, No. 691, p. 234). Massei has operated in three cases and Dillon Brown in one case, for the purpose of securing euthanasia. It seems likely that this operation, on account of ease and quickness, the comparative absence of shock, the absence of wound in tissues predisposed to necrosis, and the possibility that after a short time the tube may be dispensed with, ought always to be chosen instead of tracheotomy.

THE OPERATION OF TUBERCULIN AND OTHER BACTERIAL EXTRACTS UPON THE LYMPH STREAM.

DRS. G. GAERTNER and FR. ROEMER, after reviewing the contributions of Heidenhain, Buchner, and C. Ludwig, state, as the result of their experiments, that the solutions denominated bacterial extracts have a very marked action in slowing the lymph stream.—*Wiener klinische Wochenschrift*, 1892, No. 2, S. 21.

CREASOTE IN THE TREATMENT OF PULMONARY PHTHISIS.

DR. BEVERLEY ROBINSON has used this remedy since 1888 with good success (*New York Medical Record*, 1892, No. 1112, p. 229). Nearly all of the general symptoms are benefited; cough is diminished in frequency and severity, expectoration lessened in quantity and changed in quality, nutrition is aided, and he is sure that in several instances the bacilli have disappeared from the sputa. Locally, the signs are often ameliorated. The drawbacks are that the stomach occasionally becomes intolerant, and in a few instances he has had his fears aroused that it might have an injurious effect upon the kidneys. He uses beechwood creasote, commencing with one-half to one minim, and increases its frequency gradually from three or four times daily to every two hours, and has administered it to twenty-five drops in the twenty-four hours. He uses it in emulsion, or in whiskey and glycerin, or with wild cherry. He employs it also in his inhaler in alcohol, in the proportion of one to eight. It can also be administered in the enteric pills of Flint, six to fifteen daily. [The method of administration by enteric pills

seems to be excellent, in that a larger dose can be employed with less digestive disturbance, in several instances a daily amount of fifty minims not having occasioned inconvenience, even when continued for several days.—R. W. W.]

POISONING BY CREASOTE.

DR. W. FREUDENTHAL, in the *New York Medical Record*, 1892, No. 1120, p. 456, reports an instance in which, during a course of treatment of eight months, the daily dose of two hundred drops had been reached. Marked symptoms of poisoning developed with the two doses of one hundred drops taken with but a brief interval. Again commencing with small doses, the patient was able to take with benefit over three hundred drops per day. Creasote is evidently a strong poison, but the organism becomes easily habituated to it, and it can be well borne for a long time.

A NEW METHOD OF TREATING A PNEUMONIA WHICH THREATENS TO SUPPURATE.

DR. R. LÉPINE, in *La Semaine Médicale*, 1892, No. 11, p. 77, records his experience in one case where he made use of the method proposed by Prof. Fochier, namely, to produce an artificial abscess which can be treated surgically (*abcès de fixation*). He produced on each limb an abscess by hypodermatic injection of a small quantity of essence of turpentine. Although the condition of the patient was desperate, the improvement was marked and rapid, and recovery followed.

THE THERAPEUTIC ACTION OF THE NITRITES.

DR. KENELM WINSLOW, in the *Boston Medical and Surgical Journal*, 1892, vol. cxxvi. p. 353, writes a very interesting paper upon the symptomatology of these remedies upon the different systems of the body, and briefly gives the therapeutic indications in diseases of the respiratory organs, the circulatory system, renal diseases, and nervous affections. He adds a short section upon poisoning by these agents, reporting, however, no fatal cases.

[The paper is an excellent *résumé* of the opinions of modern clinicians.—R. W. W.]

THE TREATMENT OF INFLUENZA BY DRUGS.

PROF. H. A. HARE believes that continuous rest and stimulants are in many cases absolutely essential and of greater importance than drugs. The coal-tar antipyretics are useful, not administered for the relief of fever, but for pain, in small doses and with caution, phenacetin preferred, although it gives rise to cyanosis, at times with advantage to be combined with salol. If case is seen during the first few hours, a mixture of tincture of aconite, spirit of nitrous ether, and solution of citrate of potassium is administered. If fever is excessive, cold bathing is resorted to. All depleting measures must be avoided. If symptoms of marked depression arise, use strychnine in doses to be regulated by the necessities of the case, divided doses better than a few very large ones, but one-twentieth of a grain may be given twice,

three or four times in twenty-four hours. If there exists vasomotor dilatation, give belladonna with strychnine in full doses until the depression passes off, when the latter is to be continued alone through convalescence. Alcohol is not of much value during the active period of the disease; in milk-punch and egg-nog it is useful in convalescence. For cough, steam inhalations; for bronchitis, the usual mixtures—ipecac, potassium citrate; later, chloride of ammonia and cubebs. It may be necessary to use bromides, if cough is excessive, or codeia; but better results may often be obtained with cannabis indica. For sleeplessness, bromides, chloral, chloralamide, or even sulphonal. In the early constipation, castor oil, sulphate or citrate of magnesia, will lessen the fever.—*Therapeutic Gazette*, 1892, No. 2, p. 100.

ON THE TREATMENT OF INFLUENZA.

MR. FRANCIS TAYLOR SIMSON treated himself with two minims of pure carbolic acid three times daily. In severe cases it is given every four hours. To obtain sleep, which he believes to be of great importance, he prescribes ten grains of Dover's powder the first night, uses stimulants, and insists that the patient eat in spite of his disinclination. If the cough is severe, he uses morphine dissolved in hydrobromic acid and chloroform.

DR. WILLIAM ROBERTSON believes that in pure benzol, in five-minim capsules every two or three hours, we have a most valuable remedy.—*British Medical Journal*, 1892, No. 1621, p. 171.

THE ANTISEPTIC TREATMENT OF DIPHTHERIA BY ANTIPYRINE.

This already widely used remedy is likely to occupy a still broader field, according to DR. A. VIANNA (*Comptes-rendus hebdomadaires, Société de Biologie*, 1892, No. 12, p. 109). As a result of laboratory work, finding that a 2½ per cent. solution prevented the development of the diphtheritic bacillus, he concludes that in daily amount of ninety grains, by the mouth, or hypodermatically to thirty grains daily, with either local applications in powder or as a solution, to an ounce daily, it can be employed with brilliant results.

CLINICAL OBSERVATIONS ON THE ABUSE OF MERCURY IN THE TREATMENT OF DISEASES OF THE EYE.

DR. E. LANDOLT objects to the heroic treatment of atrophy of the optic nerves, old affections of the retina and of the choroid, in retinitis pigmentosa, choroido-retinitis, and choroiditis disseminata with extensive atrophy of the uveal tract, believing that hygiene, tonic treatment, with rational general medication directed against special lesions, will bring about a retrocession of the morbid process.—*British Medical Journal*, 1892, No. 1630, p. 650.

PILOCARPINE IN PERITONITIS.

DR. MADISON REECE, in the *Medical Standard*, 1892, No. 3, p. 65, considers that in the administration of one-tenth of a grain of the muriate of pilocarpine every three hours we have a valuable remedy for peritonitis. He has used this remedy in twenty-four cases—idiopathic, traumatic, and septic forms—of

which four were fatal. In appropriate cases, he is a strong believer in surgical interference. Although with free salivation and profuse sweating there is generally a relief of the bad symptoms—lessened frequency of the pulse, respiration, and tenderness of the abdomen—yet he administers morphine hypodermatically, in occasional doses, to relieve pain.

THE USE OF THE CONSTANT ELECTRIC CURRENT IN THE TREATMENT OF INTESTINAL OCCLUSION.

DR. M. SEMMOLA (*British Medical Journal*, 1892, No. 1625, p. 380) reports a case in which it was shown that there was an intestinal occlusion due exclusively to transient intestinal paralysis through defective innervation, in which the constant electrical current had a truly marvellous effect. The positive pole was, by means of a rectal catheter, carried into the bowel for about ten inches; the negative pole, olivary in form, covered by a cloth moistened in a saturated solution of chloride of sodium, was rubbed transversely over the surface of the abdomen for eight minutes thrice daily. Success followed after the first day of treatment.

THE TREATMENT OF CHLOROSIS WITH SULPHUR.

In the *Berliner klinische Wochenschrift*, 1892, No. 13, S. 295, PROF. HUGO SCHULTZ concludes that in cases of pure chlorosis, when iron remains without effect, the general condition improves with sulphur; after treatment for some time with sulphur, it can then be omitted and iron given with benefit; but in cases of chlorosis when there is catarrhal inflammatory condition of the digestive tract, sulphur is not tolerated.

ANILINE DYES AND THEIR USE.

PROF. J. STILLING (*Deutsche medicinische Wochenschrift*, 1892, No. 10, S. 205), speaking from a two years' use of these compounds as antiseptics, does not believe that they are contaminated with arsenic, phenol, copper, and zinc, but that they may be obtained chemically pure and of a definite and constant composition. In support of his position he cites the internal use of methyblue by Ehrlich, and in ophthalmic surgery, the testimony of E. Meyer and Panas.

The following papers are worthy of note:

"The Method of Action of the Revulsives," by DR. ALBERT BESSON (*Comptes-rendus hebdomadaires de Séances de la Société de Biologie*, 1892, No. 8, p. 43). Their action upon circulation, temperature, respiration, nutrition.

"The Therapeutic Efficiency of Diuretin," by DR. EUGENE FRANK (*Prager medicinische Wochenschrift*, 1892, No. 12, S. 125). Its use in chronic nephritis, valvular disease of heart, myocarditis, pericarditis.

"The Treatment of Medical Erysipelas," by DR. P. CHÉRON (*L'Union Médicale*, 1892, No. 28, p. 325, and No. 29, p. 337). An excellent review of the literature and containing many approved formulas.

"Hyoscine, and a Case of Poisoning by the Hydrobromate," by DR. J.

ALLAN GRAY (*British Medical Journal*, 1892, No. 1631, p. 705). A carefully observed case warning against the indiscriminate use of this drug as a powerful hypnotic.

"The Treatment of Inoperable Malignant Disease by Injection of Methyl-violet," by MR. FRED. F. BURGHARD (*Provincial Medical Journal*, 1892, No. 124, p. 177). A conscientious paper, but not a sanguine one. Thinks experiments should be continued, as this method presents advantages.

MEDICINE.

UNDER THE CHARGE OF

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THE CLINICAL VALUE OF TRACHEAL TUGGING.

DR. WM. EWART (*Brit. Med. Journal*, 1892, No. 1629) found tracheal tugging in 30 out of 60 males, and in 16 out of 57 women, taken at random. Three of the males had aortic aneurism.

Two circumstances which clearly favor the occurrence and degree of tugging are:

1. Cardiac excitement (observed in several females).
2. Forcible inspiration—probably by the stretching of the air-passages as a whole and by the slight inspiratory descent of the larynx, which perceptibly intensifies the traction already made on the cricoid by the observer's fingers.

The test is indispensable for a diagnosis in cases where the signs of aneurism are latent and physical examination is rendered difficult by the presence of general bronchitis. The slighter degrees of tugging observed in healthy individuals does not in the author's opinion lessen its value. Two important questions remain for solution:

1. Can an aneurism of the arch of the aorta, be present without causing tracheal tugging?
2. Is tracheal tugging ever strongly developed except in cases of aortic aneurism or dilatation involving the transverse portion?

The author confirms MacDonnell's statement, that aneurism of the ascending arch does not necessarily occasion tugging.

"What significance are we to attach to the relatively frequent occurrence of slight tugging in healthy persons? The presence or absence of this

peculiarity constitutes a difference between individuals which must have its meaning, and which probably will have its future uses, perhaps in directions far removed from the diagnosis of aneurism.

"It has not yet been pointed out that the left bronchus has a still closer connection with the left pulmonary artery than with the aorta, whilst the arch formed by the former vessel is much shorter and less curved than the aortic arch. Perhaps the slight tugging discovered in healthy persons may have its origin in the normal pulsation of the pulmonary artery."

ON THE PRESENCE OF URO-HÆMATO-PORPHYRIN IN THE URINE IN CHOREA AND ARTICULAR RHEUMATISM.

A preliminary communication by DR. ARCHIBALD E. GARROD (*Lancet*, 1892, No. 3580).

In acid solution the spectrum of uro-hæmato-porphyrin contains two bands and an intermediate shading, which the writer is unable to distinguish from those of acid hæmato-porphyrin in dilute solution.

The amount present in the urine of rheumatic patients is rarely, if ever, sufficient to impart a characteristic color to the urine, and it is generally necessary to precipitate the pigments and make an acid alcoholic extract for spectrum analysis.

Recent observations of Salkowsky render it probable that the administration of sulphonal may cause excretion of hæmato-porphyrin in the urine. It is, therefore, important to state that the occurrence of uro-hæmato-porphyrin in the urine in acute rheumatism is quite independent of the salicylic treatment.

Dr. Garrod has found uro-hæmato-porphyrin in the urine of choreics in 14 out of 20 cases examined, and sometimes in quantities such as are seldom met with.

"The quantity of the pigment present appears to bear some relation to the severity of the case; but considerable amounts may be found in the urine of patients who have a persistently subnormal temperature. The analysis of the cases shows that the presence of uro-hæmato-porphyrin is most constant in cases in which there is reason to suspect a rheumatic taint. Of the 20 patients referred to, 5 had definite personal histories of articular rheumatism, and all of these were passing uro-hæmato-porphyrin in their urine—4 of them in considerable quantities and 1 in traces only; 2 had doubtful histories of articular rheumatism, and both of these had uro-hæmato-porphyrin in their urine—1 in considerable and the other in unusually large amount; 3 had murmurs, but nothing else to suggest rheumatism, and of these—2 were passing urine containing considerable quantities of uro-hæmato-porphyrin, 1 with a trace only; 2 had clear family histories of rheumatism, but no personal histories, and no murmurs—the urine of 1 of these contained a trace of the pigment, that of the other none. The remaining 8 patients had no rheumatic family or personal histories, and no cardiac murmurs. Of these, 3 had uro-hæmato-porphyrin in their urine; 1 in an unusual amount, 1 in considerable quantity, and 1 a trace only. The urine of the other 5 contained no uro-hæmato-porphyrin when examined. Since the presence of the pigment in the urine is by no means peculiar to rheu-

matic cases, but is only an unusually frequent phenomenon in that disease, the above results, did they stand alone, would scarcely offer any evidence of the part which rheumatism plays in the causation of chorea; but, when they are taken in conjunction with the evidence derived from other sources, they must, I think, be acknowledged to supply a fresh link between these two conditions. This conviction gained in force from the fact that I have not obtained such results in other nervous disorders; but up until now my observations on the urine of patients suffering from such diseases are few in number, and it is quite possible that the results of a further search may tend to invalidate this argument."

MEDIASTINAL AND PULMONARY CARCINOMA ASSOCIATED WITH RETRACTION OF THE CHEST-WALL.

DR. PERCY KIDD related the following case at a recent meeting of the Clinical Society of London:

The patient, a butcher, aged fifty-two years, had suffered from cough, expectoration, dyspnoea, and wasting for three months. On admission there was retraction of the left side in front, with dulness over the whole lung, most marked at the upper lobe. The inspiratory murmur was very feeble throughout, expiration being faint and blowing at the apex. On the right side the physical signs were normal. The heart was not displaced. The temperature maintained a remittent character throughout, ranging from 101° at night to 99° in the morning. A troublesome cough with copious expectoration, which the patient voided with difficulty, and dyspnoea were the chief symptoms. The sputum was repeatedly examined for tubercle bacilli, with a negative result. Death occurred from exhaustion about eight weeks after admission. The case was regarded as one of chronic phthisis, with thickening and adhesions of the pleura. The necropsy disclosed a large carcinomatous growth in the fork of the trachea, extending into and infiltrating the upper lobe of the left lung, which was firmly adherent to the ribs, the lower lobe was partially collapsed, and the bronchi were dilated and filled out with pus. The whole was much reduced in size. There was no growth in the right lung, which was large, and contrasted strongly with the left. The left main bronchus was moderately narrowed from infiltration of its mucous lining.—*Lancet*, 1892, No. 3578.

HEREDITARY OR HUNTINGTON'S CHOREA.

DR. ERNEST T. REYNOLDS, of Manchester, records two well-marked cases of this affection in the *Medical Chronicle*, 1892, vol. xvi., No. 1.

CASE I.—J. W., aged thirty-three years, laborer. Both maternal grandparents suffered from chorea, and paternal grandparents slightly. His mother commenced chorea at thirty-three years of age, and died at forty-five. His only sister, aged forty-two years, began with chorea about five years ago. Was himself healthy until the age of thirty. Never had rheumatism. Movements began about two years ago; have grown gradually worse, with remissions, but never complete intermissions. The muscles of the face, head, and neck are most affected, and speech is slightly hesitating. The intercostal

and trunk muscles and the hands and toes are somewhat less involved. The knee-jerks are increased; other reflexes normal. Heart and lungs healthy. He says there are "plenty like him" in his native town.

CASE II.—J. F., aged fifty-five years; whitesmith. Father began chorèa at sixty, and died ten years later, the disease having continued until his death. No other members of the family appear to have suffered. Has himself had good health; never rheumatism.

Fell six feet on to his back fifteen months ago. Movements began in the legs during the next three months. Hands and face affected subsequently. At present the movements are general, just like those of ordinary chorea, except that they are somewhat under control. Speech coarsely hesitating, slow, and spasmodic. Mentally clear. Knee-jerks increased. Plantar reflex absent, other reflexes present; no muscular atrophies. Heart healthy.

EMBOLISM OF MIDDLE CEREBRAL ARTERY AFTER DIPHTHERIA.

DR. E. F. TREVELYAN, of Leeds, records the following case (*Medical Chronicle*, 1892, vol. xv., No. 6):

A girl, aged eight years, was admitted to the hospital, on December 12th, with swollen fauces and uvula, and a patch of membrane on the left tonsil.

On December 21st there was a patch of membrane on the right tonsil, and swelling of the cervical glands.

On January 2d (about the twenty-second day of the disease), when recovery appeared to be almost complete, she had a general convulsion with coma of twenty minutes' duration, from which she emerged hemiplegic on the right side and totally aphasic. The urine was found to be highly albuminous, and there was a faint systolic apex murmur. Death occurred quite suddenly eleven days after.

There was some softening and blurring of the parts in and outside the region of the left external capsule. A decolorized clot was found at the bifurcation of the left middle cerebral artery, extending as far as the lenticulo-striate artery. The vessels appeared healthy. Permission could not be obtained to examine the heart.

A CASE OF PARETIC DEMENTIA IN A BOY OF SIXTEEN.

CHARCOT and DUTIL (*Archives de Neurologie*, 1892, xxiii., No. 68) report the case of a boy, sixteen years old, who, previously apt and intelligent, at the age of fourteen showed evidences of mental deterioration. He became taciturn. Speech was at times stammering. On fatigue, there was tremor of the hands. At about this time he was suddenly seized with an attack in which the face became flushed; the boy staggered as if he would fall, and he was shaken by general tremor. On recovering, he complained that the right leg felt unusually heavy; and speech was more than ordinarily embarrassed. These manifestations, however, soon disappeared. The condition of the boy grew progressively worse and intelligence more and more impaired. For two months there had been incontinence of urine. The boy appeared younger than his years. He presented an air of indifference. His movements were marked by an awkwardness. His body was bent forward and the head depressed. The intellectual enfeeblement was pronounced and associated

with an apathetic condition. The boy would occupy himself in transcribing from a book, making numerous mistakes. Sometimes he would repeat the events of a day. Memory was impaired, especially for recent events. On attempted movement tremor of the tongue and lips became apparent. Articulation was defective; the enunciation of the consonants l and r was particularly difficult. Speech was hesitant and tremulous; yet the syllables seemed to encroach upon one another. Syllables and even words were sometimes omitted. The hands were shaken by fine tremor. The handwriting was coarser and larger than it had been, and was marked by tremors, the omission of words and syllables, and the displacement of letters. The pupils were unequal; the right was dilated; both reacted with accommodation but not to light. There was no diplopia, no nystagmus, no lesion of either fundus. There was decided formication, sometimes aggravated in exacerbations, and particularly marked on the right side of the body. Sensibility was otherwise unaffected. There was general muscular debility, with exaggeration of the knee-jerks, but no paresis or localized palsy. Trophic changes were wanting. Evidences of syphilis could not be detected. The father of the boy was alcoholic. The paternal grandfather had been hemiplegic and aphasic. The paternal grandmother was paralyzed in all four extremities for eleven months preceding death. A cousin of the father presented an obscure cerebral disorder.

POSTERIOR SPINAL SCLEROSIS AND GENERAL PARALYSIS.

RAYMOND (*La Médecine Moderne*, 1892, No. 15, p. 226) has reported the case of a man, forty-six years old, who presented asymmetry of the face, malformation of the external ear, cicatrices of old ulcers of lower extremities, ataxic gait, with characteristic motor incoördination. Station was swaying; the knee-jerk was abolished upon the right, exaggerated and retarded upon the left. The temperature-sense was preserved. There were lightning-pains in the lower extremities. The pupils were unequal and failed to respond to light, though they acted in accommodation. Mental changes became apparent. The man became quarrelsome. He ate voraciously at all hours of the day. During a fit of anger he was seized with tingling of the fingers of the left hand, tremor of the legs, epigastric constriction, embarrassment of speech, without loss of consciousness. The patient gradually lost the memory of recent events. Tremor appeared in the hands, in the tongue, and in the upper lip. The patient had an attack of right hemiplegia and aphasia. His mental and physical condition became gradually worse, and he died as the result of a lymphangitis consequent upon infection of the leg.

At the autopsy there was macroscopic evidence of degeneration of the posterior columns of the cord and atrophy of the posterior nerve-roots. The pia mater presented adhesions; the ependyma was granular. On microscopic examination, there was found degeneration of the posterior columns, particularly of the columns of Goll and of Burdach; systematic sclerosis of the crossed pyramidal fibers, more especially upon the left; a slight degree of diffuse perivascular sclerosis of the remainder of the cord. The sclerosis of the pyramidal tracts did not reach as high as the internal capsule. The convolutions, especially the frontal and upper Rolandic, presented the signs of

chronic interstitial inflammation. The peripheral nerves were involved in inflammation. Raymond summarizes his conclusions as follows:

General paralysis and posterior spinal sclerosis frequently coexist; the former may set in with the symptoms of the latter; posterior sclerosis may at any time be superadded to general paralysis. The encephalon, the cord, the peripheral nerves may be affected in general paralysis, simultaneously or successively.

AKROMEGALIA AND AKROMIKRIA.

STEMBO (*St. Petersburg medic. Wochenschr.*, 1891, xvi., Nos. 45, 46) has reported two cases that possess especial interest in view of numerous points of contrast that they present. In the one case the extremities especially underwent hypertrophy, developing the clinical picture of akromegalia; while in the other the extremities in particular suffered atrophy, a condition resulting to which Stembo gives the name of akromikria. The first case was in a woman, who was married at sixteen, and bore two children. Menstruation ceased at thirty. A little later it was noticed that the hands and feet were enlarged; sexual desire diminished; severe headache occurred; tinnitus aurium set in; and palpitation of the heart manifested itself. At forty, the skin was pale and discolored brown; the soft coverings of the bones of the hands and feet appeared redundant; the expression of the face was sad; speech was difficult; the voice was low-pitched; the cutaneous reflexes were enfeebled; the patellar reflex was abolished on the right, enfeebled on the left; sensibility was preserved; the electric irritability of muscles and nerves was diminished. The head was enlarged, the face especially. The nose and inferior maxilla were enormous. The lower lip was thickened, the chin prominent. Tongue and uvula were enlarged. The right lobe of the thyroid gland was present, but only a trace of the left could be detected. An area of percussion-dulness was found corresponding roughly to the manubrium sterni. The thoracic walls presented lateral flattening. The upper and lower extremities were massive, the various parts, however, retaining their mutual proportions. The hands were spade-like, the nails small.

The second case presented features that would place it in the category of the sclerodactylia of the French, but from its contrast to akromegalia Stembo has proposed for it the name akromikria. It occurred in a woman, without specific history, in whom, from her thirtieth year, the following changes successively took place in one finger after another: Close to the nails pain set in, to be followed by cyanotic discoloration and then by the formation of bullæ, rupture of which gave rise to troublesome ulcers that finally cicatrized, leaving the finger shorter than it had been; ultimately the nails of all but one of the fingers were lost. In the further progress of the case, a progressive diminution in size, especially of the extremities, manifested itself. The nose and chin also participated in the process, and the face became rigid and immobile. The skin generally was thin and smooth. The tongue and larynx were smaller than usual. The voice was high-pitched. The thyroid gland seemed to be diminished in size. At no time was there any derangement of sensibility, or were fragments of bone exfoliated. The cutaneous reflexes were normal; the deep reflexes were enfeebled. The electrical irritability of

nerves and muscles was increased. There was no area of percussion-dulness at the upper portion of the sternum, but there was dulness, with bronchial breathing, over the upper portion of the right lung. Microscopic examination of the remains of the finger-nails disclosed the presence of the achorion Schönleini.

Akromikria is to be differentiated from syringomyelia, from Morvan's disease, from anæsthetic leprosy, from Reynaud's disease, and from syphilitic and diabetic dactylitis. It differs from syringomyelia in the absence of derangement of sensibility, especially of the temperature-sense; from Morvan's disease, in the absence of sensory derangement and of exfoliation of bone; from anæsthetic leprosy, in the absence of sensory derangement, of necrosis, of thickening of nerve-branches and of associated lesions; from Reynaud's disease, in the absence of hæmaturia and of marked circulatory derangement at the tips of ears and nose, as well as of hands and of feet. There was no reason to suspect a syphilitic process, and the urine contained no sugar.

SURGERY.

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URINARY INFECTION.

After an able historical discussion of this subject, HALLÉ (*Annales des Maladies des Organes Genito-urinaires*, ann. x., No. 2) arrives at the following conclusions, which he believes to be justified by modern research and experimentation:

1. That the sole causes of urinary infection are microörganisms.
2. That the mode of infection, in the vast majority of cases, is through the urethra, and may be either spontaneous or surgical, while there are a few authentic cases of infection through the circulatory system.
3. That the necessary condition for infection, after the introduction of the microbes, is the retention and stagnation of urine in the bladder, where it forms a perfect culture medium, and that, therefore, the least retention of urine is a real danger.
4. That the pyogenic action, where no traumatism exists, is secondary and only possible after certain species have produced a catarrhal cystitis through

their power to render the urine alkaline, but that where a traumatism is present others may cause suppuration without alkalinity of the urine.

5. That systemic urinary infection may be either ascending or descending, and is microörganic; in the ascending the infection is by continuity of structures, the ureters and pelvis of the kidney being involved, while abscesses are found in the pyramidal substance; in the descending the infection is embolic, and due to the presence of the pyogenic urinary microbes in the blood, the only lesions being the multiple miliary abscesses in the cortical substance, due to emboli, the pyramids and pelvis of the kidney as well as the ureters remaining intact.

6. That variations in the intensity of the infection are to be explained by the greater or less virulence of the infecting microbes, and the condition of the patient; and the apparent immunity from systemic infection in some cases, he believes to be due to what might be called an auto-inoculation by an attenuated virus.

SUPRA-PUBIC CYSTOTOMY FOR TUMOR OF THE BLADDER.

GUYON (*Annales des Maladies des Organes Génito-urinaires*, ann. x., No. 2) reports the case of a patient who was brought to him in a markedly anæmic condition, having had frequently recurring attacks of hæmaturia with polyuria for twelve years. Taking into consideration the anæmic condition of his patient, he made no instrumental examination, basing his diagnosis of vesical neoplasm on the constant polyuria with distention of the bladder and the recurrent attacks of hæmaturia. This diagnosis was confirmed by the condition found present at the operation, in which he removed epitheliomata weighing together over seven ounces, the patient making a perfect recovery in less than twenty days.

In his remarks on these anæmic cases, he says that the first duty of the surgeon is to avoid all methods in diagnosis that shall in the least increase the loss of blood, and that, furthermore, he is to guard his patient during the operation from the ever-present danger of syncope; he advises the position of Trendelenburg especially in these cases, believing it to have, in threatened syncope, prophylactic advantages as well as those originally claimed for it.

CONSECUTIVE NEPHRECTOMY AND PYLOROPLASTY; RECOVERY.

ROUX (*Correspondenzblatt für Schweizer Aerzte*, Jahrg. xxii., No. 3) publishes the case of a young woman, whose history was incomplete, but showed a long period of digestive derangement accompanied by pains in the left lumbar region.

Physical examination revealed a tumor occupying the entire left abdominal region, unconnected with the pelvic viscera, dull on percussion, and over which the course of the sigmoid flexure was distinctly traceable. A hydro-nephrosis was diagnosticated and the kidney was removed through an abdominal incision. It was discovered that the stomach was dilated, the pylorus stenosed, its size being externally that of the little finger, and internally admitting a pen-holder.

An immediate pyloroplasty was decided upon. A longitudinal incision about

three inches in length was made, its extremities brought together and united by sutures, transforming the longitudinal into a horizontal wound; this was then closed by three sets of running sutures, the internal being catgut, the muscular and serous, silk. The pylorus after operation admitted the index-finger covered by the invaginated stomach; the patient made a good recovery, all functions being normal and post-operative vomiting being absent.

Although many would attribute this to ante-operative lavage, he believes that in this case, and in many others, we must look for its explanation in the actual incision made in the organ, but leaves the rationale of its action for the physiologists to explain.

RADICAL CURE OF PROSTATIC OBSTRUCTION.

NORTON (*Med. Press and Circular*, vol. civ., No. 4) describes a prostatome, which is similar in mechanism to a lithotrite, but both blades have cutting edges that do not overlap, the female blade being so shaped that it will easily glide back over the enlarged prostate, after introduction into the bladder, and so hollowed that it will retain within itself the section when cut. He reports four cases, in three of which this instrument, passed by median perineal section, removed a sufficient amount of the prostate to procure complete relief and cure, and says that it is his intention to further perfect this instrument so that it may be passed *per urethram*.

THREE KNEE-JOINT CASES.

OWEN briefly describes (*Med. Press and Circular*, vol. civ., No. 9) the following cases of injury to the knee-joint:

A man, twenty-one years of age, was struck on the knee by the iron step of a cart. After a few months the knee began to trouble him and to incapacitate him from walking. Splints were worn, but without benefit. Sometimes the joint got put out. When the patient entered the hospital the right knee was found to be swollen and slightly flexed, and attempts to straighten the limb caused pain over the inner semilunar cartilage. An exploratory incision was made into the joint in front of the internal lateral ligament. A thick outgrowth from the anterior cornua of the inner semilunar cartilage, the size of a horse-chestnut, was at once seen. The joint was drained for twenty-four hours, after which the limb was placed in plaster-of-Paris.

The second case was that of a girl, aged sixteen years. Two weeks before coming under Mr. Owen's observation the knee suddenly gave way; she fell and suffered great pain. After being watched for ten days the joint was opened along the inner border of the patella, when some blood-stained serum escaped. A firm, laminated blood-clot was found adhering to the synovial membrane; this was removed. The joint was washed with a weak mercuric solution and treated as described in the preceding case.

A man, aged nineteen years, ran a nail into the thigh two inches above the patella. It was extracted at once and poulticed, in spite of which the joint swelled and became painful, the patella was floating, and the axillary temperature was 100° F. The track of the nail was carefully dissected, and it was found that the synovial membrane had been punctured. The joint was

washed out with mercuric solution 1 : 2000, a drainage-tube introduced, and the usual dressing and a posterior splint were applied.

The cases all made good recoveries, with functionally perfect joints. Mr. Owen's remarks seem worth reproducing in full :

"Twenty years ago three reports like the preceding would have attracted considerable attention. A few years later they might have been regarded with something approaching suspicion, unless they had occurred in an atmosphere of carbolic spray and under a shield of gauze and 'hat-lining.' In the last decade of the nineteenth century they can hope for nothing better than a quiet, unostentatious burial in the medical press. Three knee-joints were opened, two by surgically clean scalpels, and one by an unclean nail. If the nail had been as clean as the scalpels, probably neither constitutional nor local disturbance would have followed the injury, and it seems more than likely that the man escaped acute septic arthritis by having his joint washed out on the first approach of danger. A clean incision into a joint can do no harm. An incision into, or puncture of a joint, made by anything else than a 'clean' knife, should be regarded with grave suspicion. If the surgeon do not deem it expedient there and then to open and wash out the synovial capsule, he should, at any rate, be prepared to do it at the first onset of dangerous symptoms. In such circumstances procrastination may be regarded not only as a thief, but a murderer."

REMARKS ON THE OPERATION OF EXCISION OF THE BREAST AND ITS AFTER-TREATMENT.

GOULD (*Lancet*, London, 1892, vol. i., No. 8) speaks of certain special points concerning this operation. In the matter of the direction of the incision, the author states that two considerations only should guide the surgeon. The first is imperative and has to do with the complete removal of the nipple and skin over the tumor, when that is malignant. The second is to have the cicatrix parallel to the fibres of the pectoralis major. In most cases both of these objects are best attained by the same incision—one enclosing an ellipse of skin parallel with the anterior fold of the axilla when the arm is at a right angle with the trunk. It is stated that it is sometimes convenient to prolong the incision into the axilla, but never necessary, as the axilla can be readily reached from any incision for amputation of the breast. The writer has thoroughly cleaned out the axilla in two cases of scirrhus of the breast, through an elliptical incision over the gland, the long axis of which was vertical.

When the mamma is not the seat of malignant growth, it is recommended not to invade the axilla, and even in cases of sarcoma the axillary glands are not to be removed unless affected. In cases of carcinoma, however, the glands should be removed from the axilla, together with the mass of fat in which they are situated. The intercosto-humeral nerve should be preserved.

Bleeding vessels are caught with pressure-forceps as fast as they are cut. At the conclusion of the operation the forceps are carefully removed. Occasionally one or more arteries will require twisting. A ligature is never necessary. Sponges are used only to dry the wound and are never to be rubbed over its surfaces. The less they are used the better.

The wound is to be thoroughly flushed with bichloride solution 1:2000. A continuous suture of fine chromicized catgut is recommended, each loop being caught up—the buttonhole stitch. A drainage-tube is not to be employed.

The dressing should be aseptic and it should secure accurate apposition of the wound-surfaces. The author uses four layers of boric lint to lay over the wound, the margins extending an inch beyond the wound in all directions. This is held in place by strips of plaster two inches wide. Over this, gauze or wool is applied, and held in place by a roller bandage carried around the trunk in an ascending figure-of-8. The arm is held to the side by means of an ordinary chamber-towel. The towel is folded lengthwise, and between the two folds the forearm and arm are placed, the hand being just within one end. The towel is then fixed in place by pins.

During the first twenty-four hours a firm pillow placed under the arm of the affected side may relieve the usually distressing backache. After the first day the patient may be raised to a sitting position by pillows or a bed-rest. The dressing may be removed on the seventh day, when the stitches may be carefully taken out. The wound is re-dressed by two layers of sublimate gauze, fixed with collodion, and over this a light boric lint dressing held with the roller bandage.

[It is interesting to note the various methods adopted by different surgeons in the performance of this most common operation and in the after-treatment of the patient. It may be freely admitted, however closely one is wedded to his own particular plan, that it is possible to obtain equally good results by many others apparently very unlike but based on sound operative principles. But the teaching that in these cases “a ligature is never necessary,” and that “one or more arteries will require twisting,” as though the bleeding-points were likely to be very few, is unsafe and liable to lead to frequent and large accumulations of blood beneath the flaps. It is sounder surgery to tie all active bleeding-points and not to depend to any extent upon pressure for hæmostasis. “Flushing a wound thoroughly” with 1:2000 bichloride almost always necessitates the employment of a drainage-tube to carry off the excess of serous exudate which inevitably follows. To sew up such a wound with a continuous suture is further to invite the retention of wound secretions, tension of flaps, etc., and to favor in the highest degree the occurrence of putrefactive changes in the wound, if by ill-luck the least infection has occurred. The continuous suture is open to the further objection that in thin and poorly nourished flaps it interferes too much with the circulation in the wound edges and thus prevents rapid union, or even occasionally produces a linear necrosis. Nothing but the evidence of large numbers of cases, carefully reported in detail, could overcome these objections in my mind to the above method.—J. W. W.]

ATTEMPTED LITHOTRITY IN A BOY; SUPRA-PUBIC LITHOTOMY.

CLEGG reports (*Lancet*, London, 1892, vol. i., No. 13) the following case: A boy, aged ten years, had had retention of urine demanding catheterization when seven weeks old, and suffered more or less from urinary trouble since. He walked cautiously and bent forward. He had retracted testicles, a long foreskin, and a prolapsed rectum. The urine was fetid.

A stone had been diagnosticated and an attempt was made to crush it with a No. 8 lithotrite. After considerable difficulty the stone was caught, and on screwing down the instrument the soft outer coating readily gave way, but the stone resisted efforts at crushing, and when considerable force was applied it invariably slipped from the grasp of the instrument. It was, therefore, considered advisable to perform supra-pubic lithotomy. The patient was arranged on the back of an inverted chair placed upon the operating-table. A sponge was used to distend the rectum in the absence of a rectal bag. The operation was performed without difficulty and the stone extracted. It measured two inches in length by one and one-eighth inches in breadth, and weighed 370 grains, without the débris. The bladder-wound was anchored to the abdominal wound. On the eighth day urine was passed by the urethra, and four weeks later the abdominal wound had healed. The recovery was complete; the boy is now attending school, and he has changed wonderfully in appearance.

The author speaks enthusiastically in favor of lithotritry in the majority of cases, and believes it to be the safest operation for stone if the kidneys are affected. The completely fenestrated lithotrite is recommended, and Nos. 6, 8, 10, A, B, and C will meet all requirements. The Weiss-Thompson is preferred to the Bigelow handle. The most convenient aspirator is the latest Bigelow pattern.

INTESTINAL ANASTOMOSIS AND SUTURING.

ABBE, after reporting several cases of lateral intestinal anastomosis (*Medical Record*, N. Y., vol. xli., No. 14), considers the different methods for accomplishing this purpose. He objects to plates of bone, potato, or catgut, for the reason that the foreign bodies may cause obstruction, that leakage may occur, and in the case of Senn's plates, on account of the necessarily limited size, the opening in the bowel becomes, after contraction, inadequate for the performance of its function. The few extra minutes required to do the method of simple suturing does not add any complication to the case, while the security against leakage and blocking is of great value.

The author has had the opportunity of making an autopsy on three cases in which he had performed lateral anastomosis. In the first case Senn's plates had been used. The patient died six months after operation. The aperture made in the bowel at the time of operation was one and one-half inches in length. It had contracted to three-fourths of an inch, and was inefficient, except when laxatives were employed constantly. In the second case, the patient had died six months after anastomosis with catgut rings. The opening had contracted from one inch and a half to half an inch. In the third case, eight months after lateral anastomosis of the sigmoid by suturing, the aperture had contracted from three inches to one and one-half inches. This was perfectly competent to perform its functional work.

It is believed that the future utility of lateral anastomosis depends upon openings four inches in length in the sides of the adjacent bowel. This is almost impossible with bone plates, and only to be carried out with very long catgut rings or vegetable plates, and with less security and as much consumption of time as by suturing. The contrast is enormous between drop-

ping back into the abdominal cavity an accurately sutured, absolutely tight and flexible, anastomosed intestine to any position in the cavity which its surroundings demand, and the returning of a huge bunch of bowel, inside of which there is a pair of five-inch plates of bone or raw potato, to remain as irritating foreign bodies stimulating peristalsis and tugging at the wound until they are sufficiently softened to be carried away.

It is recommended, in cases of great fecal accumulations, to first establish an artificial anus and allow some days for recuperation, when the anastomosis may be performed.

The technique of simple suturing is thus described: "Bring the two surfaces that it is proposed to unite well up in the wound and surround them by small compresses of gauze, towels, or flat sponges wrung out of hot water. Have at hand half a dozen fine cambric needles threaded with the ordinary finest black embroidery silk that has been well boiled and kept in alcohol. Cut in lengths of not more than twenty-four inches and tie with a single knot at the eye of the needle, with one end cut to within two inches. Apply two parallel rows of continuous Lembert sutures a quarter of an inch apart and an inch longer than the proposed cut. Leave each thread with its needle attached at the end of its row. Now open the bowel by scissors, cutting a quarter of an inch from the sutures, both rows of which are to remain on one side of the cut. Make the bowel opening four inches long. Apply clamps temporarily to several bleeding-points, pinching the entire cut edge without hesitation. Apply no ligatures. Treat the apposing bowel in the same manner. The clamps remaining *in situ*, the parts are quickly rinsed with water. Another silk suture is now started at one corner of the openings and unites by a quick overhand the two cut edges lying next the first rows of sutures. The needle pierces both mucous and serous coats, and thus secures the bleeding vessels, from which the clamps are removed as the needles reach them. This suturing is then continued round each free edge in turn, and all bleeding-points thus secured more quickly than by ligature. The serous surfaces around these buttonholes are then rapidly secured by a continuation of the sutures first applied, the same threads being used, the one nearest the cut edge first. The united parts are again rinsed with water and dropped into place.

In conclusion, Abbe reiterates his conviction: 1. That the attempt to simplify the technique of lateral anastomosis by bone plates and other devices has not improved it. 2. That lateral anastomosis properly done is eminently the safest and best method of restoring the canal in most cases. 3. That simple and thorough suturing with a fine silk continuous suture, applied after the manner detailed, is most satisfactory. 4. That in order to allow for the inevitable tendency to stenosis, an aperture four inches long should be made. 5. That scarifying apposing surfaces is entirely unnecessary to quick and solid repair.

[In a recent case of strangulated inguinal hernia operated upon by this method, I found that one row of the continuous Lembert sutures was sufficient to produce satisfactory apposition and complete isolation of the intestinal aperture. The bowel had been tightly constricted for forty-eight hours, and ten or eleven inches were gangrenous. The patient was already septic and much shocked. It was absolutely necessary to minimize the time of the

operation, and, indeed, the abdominal sutures were inserted with the patient almost inverted on account of increasing shock. Under such circumstances it is imperative to save every moment, and more time is usually spent upon the application of these sutures than upon all the rest of the operative procedure. The double row is most desirable when the operator is not hurried, but it is worth noting that a single row can be made exceptionally to do the work.—J. W. W.]

TREPHINING FOR CEREBRAL NEOPLASM.

NIXON describes (*Med. Press and Circular*, vol. civ., No. 9) the case of a man, aged twenty-eight years, who suffered from attacks of giddiness, forgetfulness, and defective vision. There was a history of syphilis. Later, intense pain in the head developed, which extended round the forehead and down the neck. Paralysis of the left leg and arm followed, and double optic neuritis was discovered. The patient was dull. Control of the sphincters was lost.

The operation of trephining was performed at the right parietal eminence, as this was the former site of a suppurating sebaceous cyst, and it was thought that perhaps an abscess might have developed beneath the skull. The bone was extremely dense and half an inch thick. The meninges were matted together and thickened. A hard, cartilaginous substance was seen dipping deeply into the brain, and running forward toward the fissure of Rolando. A portion also ran inward toward the falx cerebri. The neoplasm was removed and the wound treated by the usual methods. When the patient recovered from the anæsthetic he was quite conscious, was free from all pain, and was able to move both his arms and legs. Control of the bladder and rectum also returned. The patient did well for some five weeks, when a hemorrhage occurred from the wound, which was the site of a cerebral hernia. Styptics were applied and the wound re-dressed. The patient became comatose, and died some hours later.

This is believed to be the first case in Ireland in which a solid growth has been successfully removed from the cranial cavity.

THE TREATMENT OF TUBERCULOUS ABSCESSES CIRCUMSCRIBED IN THE RETRO-VISCERAL REGION.

KRAMER (*Centralblatt f. Chirurgie*, 1892, No. 12), emphasizes the fact that in spite of the great attention paid to tubercular abscesses in most regions of the body, in recent years, the treatment of similar collections in the retro-visceral space has not kept pace. Antiseptic methods should be employed in these cases as well as elsewhere. Retro-pharyngeal abscesses have been treated by evacuating simply. It will not be feasible to attack the diseased bone in most cases, but thorough antiseptic treatment should be carried out. These abscesses can be readily reached from an incision in the neck. This has already been tried, but has not been followed by surgeons in cold, as well as acute and phlegmonous, abscesses of the retro-pharyngeal space. Chiene, in 1877, did this operation by making an incision from the mastoid process, along the posterior border of the sterno-mastoid muscle, and keeping along the anterior surface of the spinal column. Burckhardt made his

incision on a level with the larynx, between this and the anterior border of the sterno-cleido, cutting through skin and platysma, and on the inner side of the thyroid vessels until the common carotid and the abscess in this way are reached. Roser, in his anatomical surgery, recommends an incision as for external cesophagotomy. After the abscess is opened by one of these methods, then, as in other abscesses, irrigation of sublimate may be employed, followed by injections of iodoform in glycerin, with or without curetting. In this way the iodoform is brought in direct contact with the seat of the disease. Iodoform gauze is to be introduced, so as to favor the subsequent discharge of the tuberculous sequestrum. The external wound is always to be tamponed.

Extension may be carried out with this treatment, and in cervical spondylitis better results than heretofore may be hoped for.

The author reports a case successfully operated upon by Burckhardt's method. The duration of the operation was twenty-five minutes; there was little hemorrhage: no ligatures were necessary. The glycerin and iodoform and iodoform gauze were employed.

A NEW APPARATUS FOR THE TREATMENT OF SCOLIOSIS.

SCHEDE (*Deutsche medicinische Wochenschrift*, 1892, No. 12) advises the apparatus here described in the treatment of scoliosis, and believes that more can be accomplished by this means than by measures formerly adopted.

The apparatus consists of a framework made of gas-pipe, consisting of four upright posts, joined together on three sides by cross-pieces. There are arranged two padded horizontal boards, which are movable, to hold the pelvis firmly. The anterior one is so padded that the symphysis remains free from pressure, so the development of the antero-posterior diameter of the pelvis is not unfavorably influenced. There is an upright bar from which is suspended the head-swing, held by a chain carried over two simple pulleys. A movable horizontal bar is also attached to this bar. By means of a screw it is put at such a height as will put the arms on the stretch when the head is in suspension. To the vertical rod is also attached a ring made of gas-pipe of a size sufficient to go outside of the body of the patient. This ring is so arranged as to be readily raised or lowered. In this ring several upright rods are fastened which carry long horizontal screws with large pads on the end next to the body. Two of these pads act as shoulder-supports, which are provided with straps. The others are used to make pressure and counter-pressure on the thorax with the view of correcting the deformity. To overcome the torsion, rubber adhesive plaster is placed on the back and sides of the patient; to this plaster is attached a cord which runs over a pulley on a level with the attachment to the plaster, and pulling in a direction to overcome the deformity. Three to ten pounds are placed on the other end of the cord. The function of this is assisted by the pressure-pads, which, being on screws, are adjustable.

The head-swing is elevated until the patient rests on his toes. Half an hour is spent in the apparatus morning and evening.

Two cuts are inserted which greatly aid in elucidating this apparatus.

In bad cases a plaster-of-Paris bandage may be applied during the night, covering the pelvis and even part of the thighs.

OPHTHALMOLOGY.

 UNDER THE CHARGE OF

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 ON THE ACTION OF LIGHT ON THE CRYSTALLINE LENS AND RETINA.

In a long paper in the *Nordisk Ophthalmologisk Tidsskrift*, WIDMARK gives an account of experiments which he has made in order to determine the action of light on these parts of the eye. The main results of these experiments are that the ultra-violet rays are capable of producing cataract, although, in this respect, they are very much less active than they are in the case of the skin, the conjunctiva, and iris.

In his former well-known investigations he proved that the action of light on those structures was almost entirely due to the ultra-violet rays. He considers it probable, from his own experiments, and from a careful perusal of the records of cases of cataract caused by lightning, that the main cause of the cataract in such cases has been the action of these invisible rays. On the other hand, the changes produced by light in the retina were found to be caused by the visible rays, their preponderating effect being mainly due to the very complete absorption of the ultra-violet rays by the crystalline lens. His experiments in this connection, whilst they confirm those of Czerny and Deutschmann, lead him to differ from the conclusion of these observers, inasmuch as being performed in such a manner as to exclude as much as possible the heat rays, they clearly showed that the effect produced was not to be looked upon as a coagulation caused by heat as they supposed.

At the beginning of his paper, Widmark shows that previous experiments by Brücke, Donders, and Chardonnet, although, in some respects, leading to apparently conflicting results, led to the conclusion that the transparent media of the eye absorbed the ultra-violet rays. He, himself, demonstrated this fact in the case of the lens in the following manner: Taking advantage of the facts as to the irritation of the skin produced by these rays which his former experiments had conclusively demonstrated, he allowed a strong electric light to play on a definite area of the skin, one part of which was covered by the lens of an ox. The result was that, whereas the unprotected portion was affected by the usual symptoms of great irritation, that on which the rays only impinged after passing through the lens, remained altogether free from irritation.

The results of all such experiments, however, as they have been made with dead tissues, cannot, without hesitation, be inferred as holding good in

the case of living tissues. This called for further investigation, and Widmark considers that the property which he has found these ultra-violet rays possess, of producing pathological changes in the media of the eye, is an indication that they are absorbed. He lays special stress on the fact that the intensity of such changes is inversely proportional to the property possessed by the different media of fluorescing. The medium which fluoresces most strongly, viz., the lens, is least affected by the absorption which takes place. With reference to the nature of the action of ultra-violet rays on the media of the eye, Widmark adduces some experimental evidence and a good deal of interesting speculation to show that it is probably not chemical, but depends on some peculiar property of the shortest (light) vibrations, which is at present but imperfectly understood, although it has attracted a good deal of attention lately in connection with certain electrical phenomena which have recently been studied by Hertz, Wiedemann, and others.

SUBCONJUNCTIVAL CYSTICERCUS.

BLESSIG has described in the *Vestnik Ophthalmologii* a case of this rare affection, which came under his treatment at the St. Petersburg Eye Hospital. The patient was a woman, aged twenty-three years, in whom a cyst of the conjunctiva had developed a year before, growing at first rapidly, and afterward very slowly. The growth caused no pain or injection, and did not interfere in any way with the movements of the eye, or with the closing of the lid. The patient merely complained of the appearance, and wished it removed. From her youth she had been in the habit of eating raw smoked ham, but had never suffered from worms. There could, therefore, be no question of self-infection from an intestinal worm, which some have given as the cause of such cysts. The cyst was situated toward the inner canthus on the semilunar fold of conjunctiva. It was about the size of a pea, and semi-transparent. The conjunctiva was otherwise normal, and the eye had full vision. The cyst was removed entire under cocaine. Its elastic consistency then became more apparent. A small, delicate, lenticular, bladdery, turbid substance was removed from it. This, on examination under the microscope, was found to be a cysticercus.

Blessig points out the comparative infrequency of subconjunctival cysticercus. Only two cases have been previously recorded in Russia. Von Gräfe saw 5 cases out of 89 of cysticercus in the eye, Hirschberg 1 out of 50. He believes that cases of cysticercus are altogether more common than the number met with in the eye hospitals would lead one to suppose. As it only occurs in one eye as a rule, and often causes little or no pain, probably many country people suffering from it do not seek advice.

PARALYSIS OF THE THIRD NERVE COMPLICATING GRAVES'S DISEASE.

The following case reported in *Brain* by DR. FINLAYSON is of interest in connection with the still obscure nature of Graves's disease. A married woman, aged thirty-seven years, who had for some time suffered from goitre, rapid action of the heart, and nervousness, but in whom there was no exophthalmos, developed a complete paralysis of the right third

nerve a year before. The paralysis appears to have come on suddenly. Finlayson cites Ballot as the author of the most important article on paralyzes of bulbar nerves along with Graves's disease. His article may be found in the *Revue de Médecine* for 1888, but no case of unilateral third nerve paralysis seems to have been recorded in this connection before.

ASSOCIATED SPASM OF THE SUPERIOR RECTI MUSCLES.

DR. REICH, of Tiflis, records the following case (*Vestnik Ophthalmologii*). On the 8th of March, 1890, a man of thirty years presented himself with the complaint that for ten days his eyes closed and turned upward involuntarily about every ten minutes — sometimes even oftener. He was consequently unable to go about without assistance, and could see nothing during the three or four minutes the spasm lasted. He was otherwise healthy, with light eyes, and moderately dilated pupils. Reich had soon an opportunity of seeing the condition described by the patient, and found both eyes so forcibly moved upward that the pupils, notwithstanding a slight simultaneous raising of the lids, were hidden from view. The eyes did not remain fixed and motionless in that position, but underwent nystagmic movements, the excursion of which, though varying, was never great. During the course of forty minutes three such attacks, each lasting four to five minutes, were observed. In the intervals the position of the eyes was normal. All that could otherwise be made out was pretty marked drowsiness, and a somewhat slow action of the heart. As to the cause, he had had three days' fever just before the attacks began; there was no history of any blow or any headaches. He did not drink to excess. The treatment adopted was rest with thirty grains of iodide, and an equal amount of bromide, of potassium in the twenty-four hours. In a few days the attacks, after getting gradually less frequent, stopped altogether.

CURETTING OF THE LACHRYMAL SAC.

DR. F. DESPAGNET urged this before the Congrès Français d'Ophthalmologie (*Recueil d'Ophthalmologie*, ann. xiii., No. 5), his conclusions being that: Whenever the overflow of tears arises from catarrh of the lachrymal sac (this being the most frequent cause) the alteration of the mucous membrane was the principal factor, and by catheterizing and the injection of astringents the attempt should be made to modify this. If this treatment, practised through a greater or less period, does not produce the desired result, curetting of the mucous membrane is the operation to be chosen, because it attacks directly and without complication the diseased part and allows the preservation intact of the lachrymal excretory apparatus. If the epiphora coexists with great dilatation of the sac, the curetting should be preceded by the excision of a portion of its anterior wall. Curetting is also indicated in the case of abscess of the sac:

THE OPHTHALMOMETER IN PRACTICE.

JOHN B. STORY, M.B., in the *Ophthalmic Review*, vol. x., No. 117, has made an important contribution to the literature of the subject by publishing the

astigmatism found by this instrument in 139 eyes, and in a parallel column the cylindrical lenses finally agreed upon as the proper ones, after comparison of results obtained with the ophthalmometer, the test-lenses, the ophthalmoscope, and retinoscope. In 62 eyes the ophthalmometer indicated exactly the true amount of astigmatism. In 14 the discrepancy was but 0.25 D. In 35 it was 0.5 D., and in 26 it was a whole dioptré or over, the greatest difference being 3 D. Story explains that in many cases in which the instrument showed 0.5 D. of astigmatism the cylinders were not prescribed, although there was no doubt as to the presence of the astigmatism, and on this account the statistics do not do the instrument justice. He sets a far higher value upon it than these bare notes of cases would justify.

He finds that with the ophthalmometer the tendency is to overestimate the amount of astigmatism. This was the case in 67 eyes, while an underestimate was made in but 9 eyes. In this he agrees with most other writers on the use of the instrument. Ostwalt has claimed that as a rule the findings with the ophthalmometer should be diminished one-fourth to get the true astigmatism. Chibret, on the other hand, has found that its readings were usually less than the total astigmatism of the eye; while Burnett thinks that it gives about 0.5 D. too much for astigmatism with the rule—that is, greatest curvature vertical—and 0.5 D. too little for astigmatism against the rule—greatest curvature horizontal.

From what has thus far been published about it, the conclusion may be drawn that the ophthalmometer cannot replace the use of mydriatics for the accurate measurement of astigmatism. Whether as a means of approximately estimating that error of refraction it is equal or superior to the use of the ophthalmoscope by the direct method, or the shadow-test, is perhaps still *sub judice*, or may be a matter of individual taste. Meanwhile, every additional means of diagnosis has some positive value.

THE CURE OF HIGH MYOPIA BY REMOVAL OF THE CRYSTALLINE LENS.

DR. FUKALA, of Pilsen, in a thirty-page pamphlet published by Franz Deuticke, Leipzig and Vienna, 1891, and in articles in various medical journals, argues at considerable length that it is justifiable and good treatment in very high myopia—13 D. and upward—to remove the lens, even though it be perfectly transparent. It should be done by discission in children and by extraction in older persons. By such a proceeding the patient would be given distinct distant vision without having to wear very strong and very heavy concave lenses, and suffering the diminution of the retinal image and the consequent reduction of the acuteness of vision that such lenses cause. It would also obviate any danger of spasm of the accommodation; and as this has been regarded by some writers as an important cause of the increase of myopia, its removal is held to be such an important benefit as to counter-balance the inconvenience of the loss of accommodation which would necessarily attend the loss of the lens.

OBSTETRICS.

 UNDER THE CHARGE OF

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A SUCCESSFUL CÆSAREAN SECTION FOR PHYSOMETRA.

It is not usual to find Cæsarean section performed after the death of the fœtus, but ECKERLEIN reports (*Centralblatt für Gynäkologie*, 1892, No. 8) a case in which a large fœtus was contained in a pelvis so small that its exit was impossible. The patient had been in labor several days before she came to the hospital, and had ceased to feel evidence of fœtal life. Upon examination, the uterus was found tympanitic, and a foul discharge was present. The pelvis was so highly contracted that embryotomy would have been more dangerous than an abdominal section, and as the patient and her husband greatly desired the subsequent birth of a living child, it was determined to perform the conservative Cæsarean section. It was impossible to use an elastic ligature, as the head of the child was impacted at the pelvic brim. The fœtus was found to be putrid, and was easily removed. The uterus when emptied, contracted very quickly and perfectly, but subsequently bled from the site of the placenta. It was accordingly tamponed with gauze and closed by two rows of sutures. After closure, the uterus was cleansed with sublimate solution 1 to 4000, then with a 4 per cent. solution of boric acid, and restored to the abdominal cavity. The patient made a tedious convalescence, suffering from abscess of the abdominal wall, which rendered union delayed. She recovered, however, and was discharged with the uterus high in the pelvis, the tissues of the pelvis being free from exudate.

POST-PARTUM HEMORRHAGE AND HÆMATOMA OF THE VULVA.

FÜTH describes in the *Centralblatt für Gynäkologie*, 1892, No. 14, the case of a multipara who had previously suffered many attacks of severe illness, who was delivered by the use of the forceps. Uterine hemorrhage followed delivery, which was checked by hot injections and the use of the iodoform-gauze tampon. There was noticed a tumor of the right labium which impeded somewhat the delivery of the head. The day after delivery the tumor had become so large as to occupy the whole space externally at the bottom of the pelvis. It was bluish in color, and its coverings began to necrose. Hæmatoma was diagnosticated, and a few days after the patient showed a small, frequent pulse, and rise of temperature to 102° F. The tumor was incised and a large blood-clot removed. The cavity was thoroughly cleansed, and as free hemorrhage occurred, two stitches were taken, and the remaining portion tamponed with iodoform gauze. A second tumor occurred upon the

left side, which was also incised and found to contain decomposed blood, with fragments of connective tissue. This was also disinfected and packed with gauze. The patient's condition afterward was very critical for over a week, but recovery finally ensued. An explanation of the hemorrhage which occurred, although the uterus was well contracted, is to be found in the frail condition of the patient's health and atheromatous disease undoubtedly present in her smaller bloodvessels.

THE TREATMENT OF ASPHYXIA IN THE NEWBORN.

FOREST (*Medical Record*, April 9, 1892) describes a method for resuscitating asphyxiated infants as follows: He places the child on its face, its head down, and expels fluids from the mouth by pressure upon the back; the child is then put in a pail or tub of hot water in a sitting posture, supported by one of the operator's hands across its back, its head bent backward. The physician grasps the child's hands with his other hand, carries them upward until the child is suspended by the arms, leans forward himself and blows air into the child's mouth; the infant's arms are then lowered, its body is doubled forward, and its thorax pressed between the hands of the physician. Air is thus expelled. Especial advantage is claimed for this method from the fact that the hot water maintains capillary circulation, and tends to assist in promoting the action of the heart.

PURPURA HÆMORRHAGICA COMPLICATING PREGNANCY.

The *Transactions of the Obstetrical Society of London*, vol. xxxiii., contain a number of interesting papers, and among them one by PHILLIPS upon the subject mentioned above. He finds that the prognosis in pregnancy complicated by purpura hæmorrhagica is extremely grave, most cases proving rapidly fatal. Death usually occurs from post-partum hemorrhage or from septic infection. Abortion or premature labor is the rule. These cases have a different rash from those in the non-pregnant. The disease is not hereditary, but often causes intra-uterine death.

CHOREA COMPLICATING PREGNANCY.

In the same volume as the above, MCCANN contributes an elaborate paper upon chorea in pregnancy and after labor. He divides the disease into three forms—true chorea of pregnancy, hysterical, and mixed. In true chorea, quickening causes an exacerbation, as do foetal movements, and peripheral stimuli, such as suckling. Chorea most often occurs in pregnant patients between the ages of eighteen and thirty. It is most common in the first pregnancy, and during the third or fourth month. It is most usually traced to a previous attack of chorea, rheumatic fever, or hereditary rheumatic history. Epilepsy, nervous disorders and fright, mental emotion, anæmia, are also causative factors. A pregnant patient will not have chorea, however, unless she has a hereditary predisposition to nervous excitability, a disordered condition of the blood, and some exciting cause; foetal movements aggravate the disease. In severe cases, the motor cortex, mental centres, and spinal cord are involved. The majority of mothers recover, some become maniacal,

others die in delirium or paralysis. If labor occurs at term, the risk to the child is not increased. Choreic movements rarely cease after delivery, although less severe. If chorea has occurred in childhood, it is almost sure to return during pregnancy. The younger the patient is during the first pregnancy, the more liable the chorea to return.

So far as treatment is concerned, the patient should be put as absolutely at rest, mentally and physically, as possible. Change of scene and surroundings is often useful. Iron, arsenic, and nourishing food should be freely given. The bowels should act regularly, and diaphoretics should be used if the skin is dry. To procure sleep, chloral, in doses of from thirty to forty grains, is recommended. Chloroform may be employed in very violent cases. To avoid abrasions, the patient should sleep in a padded bed; the mattress laid upon the floor, the walls of the room being also padded. Strychnine has been used successfully, pushed until symptoms of poisoning began. Anti-rheumatic treatment is sometimes useful. At labor, the patient should be controlled, and hemorrhage should be avoided. Especial care should be taken in antiseptic precautions.

Labor should be induced where the mother shows signs of exhaustion, where mania or serious mental affection exists, and in cases of heart complications. The decision to induce labor rests upon an accurate diagnosis, as hysterical chorea is common, and may easily deceive.

BACKWARD DISPLACEMENT OF THE UTERUS AND STERILITY AND ABORTION.

The concluding paper of this volume of *Transactions* is by HERMAN, who endeavors to ascertain the relationship between backward displacement of the uterus and sterility from an analysis of 3641 cases. He concludes that backward displacement of the uterus does not cause absolute sterility nor habitual abortion. In the later years of the childbearing period, backward displacement causes a small amount of relative sterility and also a tendency to abortion not so great as that produced by other causes.

THE OBSTETRIC ASPECT OF THE PELVIC PERITONEUM.

STEPHENSON, in the *British Medical Journal*, 1892, No. 1630, p. 645, draws attention to the fact that during pregnancy the ligaments of the uterus are put upon the stretch by the continued growth of the ovum, and that their attachments to the pelvic walls are often loosened. The peritoneum covering the uterus yields gradually, its thinning being supplied by continued and rapid growth. When expansion of the neck of the uterus is rapid during labor, the resistance of the peritoneum over the internal os is considerable; when, however, the expanding force acts gradually, the tissues yield imperceptibly, but to a remarkable degree. Stephenson employs a term used in physics, to describe this yielding of the uterine peritoneum, styling it a "viscous resistance." From this point of view the uterine peritoneum plays a considerable part in the dynamics of labor, and its rupture in cases of rupture of the uterus is easily explained. It has also a considerable part in

resistance often found at the internal os when forcible dilatation or operative procedures are necessary, and its involution proceeds with that of the body of the uterus.

MYOMECTOMY DURING PREGNANCY.

STRAUCH (*St. Petersburger medicinische Wochenschrift*, 1892, No. 10) reports the case of a patient four months pregnant who complained of pain in the left side of the abdomen. The fundus of the uterus was found midway between the pubes and the umbilicus. A tumor the size of a large goose's egg, easily movable and painful, was felt at the left side of the uterus. The tumor increased while the patient was kept under observation, and gave a sense of indistinct fluctuation, while her pain grew more acute. It was then thought to be a rapidly growing ovarian cyst. Upon laparotomy a subserous pedunculated fibroid presented at the abdominal incision; its pedicle was ligated, the tumor removed, and the peritoneum stitched over the stump. The operation took but little time, and was followed by uninterrupted recovery. The rapid growth of the tumor had been occasioned by the stimulus of pregnancy; the patient went on and completed a normal pregnancy.

THE BLOOD IN PUERPERAL SEPSIS.

OTT reports from the clinic of Von Jaksch in Prague (*Prager medicinische Wochenschrift*, 1892, No. 14) a case of puerperal sepsis in which the examination of the blood afforded information of interest. The patient was probably infected by a midwife who attended her; two days after labor she had a severe chill, followed by fever. The midwife who cared for her had a felon upon the middle finger of her right hand where the skin had been broken. During the patient's illness her urine was examined and found to contain albumin and an abundance of aceton and urobilin. An examination of the blood showed 3,470,000 red to 15,320 white corpuscles, a ratio of 1 to 220. The percentage of hæmoglobin was $8\frac{4}{10}$. An examination of the blood stained by Gram's method showed the presence of numerous cocci in groups. Septic panophthalmitis developed on both sides. An examination of the colostrum from the breasts showed the presence of cocci. The patient died about two weeks after labor, and a post-mortem revealed the lesions common in puerperal pyæmia. The cocci present in the blood, and also the condition of leucocytosis which was present, render the report of the case of unusual interest.

CHANGES IN THE BONES OF THE MOTHER DURING PREGNANCY, AND THE SIGNIFICANCE OF PUERPERAL OSTEOPHYTES.

HANAU reports in the *Fortschritt der Medicin*, 1892, No. 7, his observations upon twenty cases of pregnancy in which an opportunity was obtained to examine the bones. In those of the pelvis he found especially that in healthy persons an unusual growth of connective tissue was observed without the deposition of calcareous matter. This tissue seemed formed like Haversian systems containing a thick layer of osteophytes. Where osteophytes were absent, these borders or bands of connective tissue also failed. In

other instances, a portion of calcareous matter was present, and in others scarcely any. There seemed to be, then, a relationship between these osteoid zones and the formation of osteophytes. Osteophytes and Haversian systems seem to be analogous.

The bones examined could be readily cut, but were not as soft as in osteomalacia.

GYNECOLOGY.

UNDER THE CHARGE OF

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THE DANGERS ATTENDING CURETTING.

CROCQ (*Bull. de l'Académie Royale de Médecine de Belgique*, tome vi., No. 4) indulges in a tirade against the use of the curette, which is of interest purely from the unusual stand taken by the author. After discussing the dangers of removing the entire endometrium, he states that the results of the operation "are often either *nil* or uncertain"—that there is great risk of setting up an acute inflammatory process. He concludes that curettement is to be limited to a small number of obstinate cases which resist milder methods of treatment.

[We have quoted these opinions for the purpose of calling attention to an example of ultra-conservatism which should be strongly discouraged. There is no subject that has received more attention from French gynecologists than that of curetting, yet their voluminous contributions to the literature have been frequently an expression of individual opinions based on insufficient clinical evidence. It seems hardly necessary at the present time to defend this indispensable operation, or to dwell upon the matter of technique, which is surely not fully appreciated by the writer. When the operation either fails to relieve the patient, or is followed by pelvic inflammation, the only inference is that the surgeon has not exercised ordinary care and judgment with regard to the selection of cases and the details of the operation. Pathological theories are good in their way, but they do not take the place of practical clinical experience and common sense. The favorable results reported by American gynecologists, notably by Dr. Polk, in the treatment of endometritis by curettement and gauze-drainage are sufficiently convincing even to the conservative mind.—H. C. C.].

THE RELIEF OF SALPINGITIS BY DILATATION AND DRAINAGE OF THE UTERUS.

STRONG (*Boston Med. and Surg. Journal*, 1892, No. 11), in a short but suggestive paper with this title, advocates repeated dilatation, curetting and

drainage in a certain class of cases in preference to laparotomy. He excludes from this category all acute cases and chronic ones in which the tubes and uterus are firmly fixed by adhesions. "Mobility of the tubes and patency of the uterine end of the canal are absolutely essential."

Great care is exercised during the operation to avoid traction on the uterus, dilatation (with a branched dilator) being effected slowly. The entire uterine cavity is thoroughly scraped with a sharp curette, especially the regions of the cornua, "it being at this point that they (the uterine ends of the tubes) are frequently occluded by a slight hyperplastic enlargement." After irrigation several small rolls of iodoform gauze, the size of a goose-quill, are carried up to the fundus, their ends being allowed to protrude from the cervical canal. These are changed every two or three days for ten days, the patient being kept in bed. It is necessary to repeat this operation two or three times. Four illustrative cases are cited.

[This operation has been already highly commended by Polk for the relief of the condition mentioned, and he has also shown that it is unattended with danger, provided that proper care is exercised in the selection of cases and the technique of the operation. We must, of course, regard it as *sub judice*. On anatomical grounds we confess to a considerable amount of skepticism regarding its effect in securing patency of an occluded tube. While the endometritis can undoubtedly be cured, we are not yet prepared to explain how the diseased tube is directly influenced by curetting and drainage. More clinical evidence is needed to render the method of treatment popular, and we know no more honest and conscientious observer to furnish such evidence than Dr. Strong.—H. C. C.].

THE ELECTRICAL TREATMENT OF ENDOMETRITIS.

MANDL and WINTER (*Wiener klin. Wochenschrift*, 1891, No. 52) report forty-four cases treated by intra-uterine galvanization. The anode was applied to the interior of the uterus, a current of from fifty to one hundred milliamperes being used for five minutes. Two or three séances were sufficient to entirely control menorrhagia. If two periods passed without the former profuse flow the patient was regarded as cured, and was not treated further, but if no change was observed the applications were repeated several times at intervals of a few days. In cases of endometritis complicated by peri- and para-metritis and disease of the adnexa the cathode was also applied for the purpose of relieving pain and causing absorption of inflammatory exudates. The tension faradic current was also found to be valuable as an analgesic. Twenty-two patients, who were under observation from three to eighteen months, were cured. In fourteen cases there was chronic disease of the adnexa and peri-uterine tissues, but recurrence of the inflammation was noted in only a single instance. The advantages claimed for the treatment are: 1. It can be safely practised at the office, an anæsthetic being unnecessary. 2. With a current of moderate strength applied for a short time the entire endometrium is cauterized to a sufficient depth to promote granulation and restoration of healthy tissue, without the cicatrization observed after the use of strong currents, or of acid escharotics.

THE OPERATIVE TREATMENT OF RETRO-DISPLACEMENT OF THE UTERUS.

CHAPUT (*Semaine Médicale*, 1892, No. 17), at the conclusion of a paper on this subject, summarizes as follows: 1. Simple retroflexion requires no treatment. 2. Retroflexion complicated with metritis and prolapsus is best treated by curetting and repair of the pelvic floor. 3. Alexander's operation is often difficult, and sometimes fails to keep the uterus in its normal position, or if the organ is anteverted the symptoms are not relieved. 4. Ventro-fixation is preferable to the latter operation, since the surgeon is not only sure that he has replaced the uterus, but he is able to remove the adnexa, which are so frequently diseased.

SAENGER (*Centralblatt für Gynäkologie*, 1892, No. 1) continues his controversy with Schücking relative to the operation devised by the latter, which he opposes on the ground that fixation of the anteflexed uterus is not the result to be aimed at in ventro-fixation, but rather shortening of the sacro-uterine ligaments with free mobility of the organ, as when it is supported by a pessary.

CANCER OF THE FALLOPIAN TUBES.

WESTERMARK and QUENSEL (*Nordiskt Medicinskt Arkiv*, 1892, Band ii., Heft 1) report the following rare case: The patient, aged forty-five years, had enjoyed good health until a year before the operation, when she began to have metrorrhagia with abdominal pains. On examination two hard nodular masses were felt, one above and one to the right of the uterus. Laparotomy was performed, and an ovarian cyst was removed from the right side. The corresponding tube was transformed into a solid tumor, two inches in diameter, while the left was hypertrophied and dilated, and contained a number of papillary excrescences. The patient gradually became weaker after the operation, but lived five months. At the autopsy cancerous enlargement of the retro-peritoneal glands was discovered, with metastases in the liver. Microscopical examination of the tubes showed them to be the seat of alveolar carcinoma, which had evidently originated in the tubal mucosa.

LACERATION OF THE CERVIX AS A CAUSE OF CANCER.

GODSON (*Medical Press and Circular*, December 2, 1891) writes with a considerable degree of assurance on this subject, basing his opposition to the statement that laceration of the cervix uteri predisposes to carcinoma on the fact that during twenty years spent in out-patient work in gynecology he observed many cases of cervical laceration, and "has never known one of these to return with cancer of the cervix." Moreover, he states that he has never encountered a case of carcinoma of the cervix in which there was a previous history of uterine disease, hence the inference that the patient had no lesions resulting from parturition.

[It is fortunate that it is not from such loose statements as the above that scientific statistics are compiled, or uterine pathology would remain stationary. They express the attitude of one who, having made up his mind that a thing is not so, refuses to accept any but negative evidence apparently sustaining his theory. Dr. Godson doubtless belongs to the school of gyne-

cology which cling tenaciously to the old idea of "ulceration," closing their eyes to the fact that laceration of the cervix, erosion, and epithelioma often form a natural sequence clear enough to the unprejudiced mind.—H. C. C.]

PERINEORRHAPHY DURING PREGNANCY.

WEIL (*Prager med. Wochenschrift*, 1892, No. 11) reports an interesting case of laceration involving the sphincter and recto-vaginal septum, in which he operated in the fifth month of pregnancy, the patient being delivered at term without injury to the perineum. He regards the operation as justifiable during pregnancy when the patient is rapidly losing her strength from diarrhœa, so that abortion is imminent, and suffers severely from the loss of perineal support. The danger of infection during labor, by reason of the communication between the rectum and vagina, is to be borne in mind. Care during the delivery of the head, with the performance of episiotomy, ought to prevent a second laceration.

THE RELATION OF VARICOCELE TO NEURASTHENIA.

WIEDERHOLD (*Deutsche med. Wochenschrift*, 1891, No. 37) believes that in many cases of hysteria with supposed ovarian symptoms the trouble is really due to dilatation of the veins forming the spermatic plexus, and that if any operation is performed ligation of these veins is preferable to castration, providing that the ovary is not much diseased.

INTESTINAL OBSTRUCTION DUE TO DISPLACEMENT OF THE UTERUS.

NÉLATON (*Nouvelles Archives d'Obstétrique et de Gynécologie*, 1892, No. 2) reports the case of a woman, aged twenty-eight years, previously in good health, who during a menstrual period was seized with severe colicky pains in the abdomen and vomiting, which persisted for three days, efforts to move the bowels being unsuccessful. Tympanites was excessive. On the fifth day gas escaped *per rectum*; on the eighth, the patient had a fluid movement, and no further obstruction was noted until the menses reappeared, when the symptoms of intestinal occlusion again developed. A rectal examination now revealed a cicatricial mass compressing the rectum at a point two and a half inches above the anus; the induration was continuous with the uterus, and was thought to be the remains of an old hæmato-salpinx. It was situated so deeply within the pelvis that it seemed to be more accessible through a vaginal than through an abdominal incision. The cul-de-sac of Douglas was opened from below, and adhesions attaching the retroflexed uterus to the rectum were divided, when the former was readily replaced. Examination *per rectum* then showed that the obstruction had been removed. The patient was discharged at the end of two weeks, and never had a return of the trouble.

SECOND (*Ibid.*) reports the case of a patient, aged thirty-six years, who presented all the symptoms of acute intestinal occlusion. Under chloroform, a retroflexed uterus with a supposed fibroid at the fundus was replaced, by introducing the entire hand into the rectum, and the obstruction was overcome. Several months later vaginal hysterectomy was performed, and the tumor proved to be an ectopic gestation, which was removed successfully.

PÆDIATRICS.

UNDER THE CHARGE OF

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ASSISTED BY

THOMPSON S. WESTCOTT, M.D.,

OF PHILADELPHIA.

SOME SPECIAL FEATURES IN THE HEART AFFECTIONS OF
CHILDHOOD.

In summing up the points of an instructive lecture under this title, OCTAVIUS STURGES (*Lancet*, March 19, 1892, p. 621) makes the following conclusions:

1. Heart disease in childhood, whether functional or organic, is apt to be overlooked and misunderstood. Overlooked, because its early signs are often only discoverable by careful physical examination; and misunderstood, because such divergence from the normal as in the adult usually implies structure-change, is, in the child, often due to temporary disturbance.

2. Owing to the equivocal symptoms of acute rheumatism in children and the indistinct and intermittent character of pericardial rub at that age, the occurrence of pericarditis, which may mean the commencement of heart disease, often escapes notice.

3. The earliest physical signs proper to endocarditis cannot be defined. The heart's sounds and action are invariably modified in acute rheumatism, and while pericarditis almost implies endocarditis, irregular rhythm, systolic apex-murmur, doubling of second sound, slight presystolic murmur, will all in their several degrees suggest it; but indubitable signs of material heart change are gradually developed as the result, and not by the mere presence, of endocarditis.

4. The clinical history and morbid anatomy of chorea warrant the belief that mitral systolic murmur, increasing until it becomes slightly blowing, and then decreasing until it disappears, may be due to a form of mitral endocarditis common in chorea, less common in rheumatism, that is recovered from without heart deformity.

5. Mitral stenosis, the common sequel of rheumatic endocarditis, is not at once disabling. The well-being of a child having this defect depends largely on his immunity from subsequent rheumatic attacks, however slight; and what chiefly abridges the period of health he will enjoy is the occurrence of adherent pericardium either in the first or in some later attack.

HEPATIC CIRRHOSIS IN CHILDREN.

From the post-mortem records of St. Bartholomew's Hospital and the Hospital for Sick Children, Great Ormond Street, London, STACK (*The Practitioner*, 1892, No. 3, p. 186) has selected twenty cases of this affection

in children under twelve years, in which the pathological features of the organ resembled the condition of chronic interstitial hepatitis found in the spirit-drinking adult. His classification excludes cases of overgrowth of fibrous tissue due to mitral disease, and cases of fibrous change due to previous gummatous formations. Cirrhosis of the liver of the hob-nail variety in adults has practically but one cause, namely, alcohol. While it is almost certain that alcohol can be a cause of the disease in children, under extraordinary conditions, it is equally certain that it is not the sole or even the most common cause. In none of these cases could it be suspected; the average age of the twenty children was about five years—too early, most certainly, to consider the possibility of an acquired habit of drink. Syphilis has been given the credit of a large proportion of cases. Dr. Palmer Howard, for instance, states that 15 per cent. are due to this disease. Leaving out of account the class of cases of syphilitic origin which are excluded from the present series, the author has found no evidence to point to any one of the cases as owning syphilis as its cause. No evidence confirmatory of the etiological importance of rickets or malaria was found.

In seven of the cases the children had had scarlet fever, and in four or five of these the symptoms of cirrhosis definitely dated from this illness—too large a percentage to permit of the supposition of simple coincidence. Klein, moreover, has published eight cases which occurred after scarlatina. Measles, though mentioned in six cases, appears in none to bear a causal relation except when it was followed by scarlet fever. While tubercular disease is recorded as associated with seven or eight of the cases, the author has good reasons for doubting its relation to the hepatic condition. In seven of the cases there was a definite acute nephritis, which, while doubtless not accidental, could not but be attributed, in common with the cirrhosis, to some irritative product in the blood or lymphatics. The relation which sex bears to this disease in the present tables was significantly shown by a proportion of seventeen boys to three girls.

The morbid anatomy is precisely similar to that observed in adults, with one marked difference, namely, that the liver is scarcely ever smaller than natural, and is in all cases as heavy as it ought to be, often much heavier. The increase in connective tissue follows Glisson's capsule, the capsule of the liver is more adherent than natural, and the liver substance is often yellow and always tough, the cells undergoing fatty degeneration and atrophy. The duration of illness, dating from the first symptom, was very short, the average time being about five months; five cases were under one month.

The occurrence of ascites was singularly constant in these cases, in striking contradistinction to the frequently insidious course of the disease in adults. The explanation of this fact, to the author's mind, is the greater rapidity in the rate of formation of fibrous obstructions, no time being given for any accommodation from the portal vessels to take place.

Jaundice, though by no means constant or even common in adults, occurred in only one case. It is remarkable, however, that so many cases, where there was sufficient new tissue to cause portal obstruction, were not affected with jaundice. Excepting epistaxis in one case, no hemorrhages were noted.

RICKETS IN AUSTRALIA.

Writing of the infrequency of rickets in Australian cities as compared with the notable proportion of cases found among children in the large cities of Europe, A. JEFFERIS TURNER (*Australasian Medical Gazette*, Jan., 1892, p. 104) is disposed to recognize a complex causation. Improper feeding, which, he believes, stands first as a cause of rickets, must not be taken as its exclusive cause. Between the ages of six months and the end of the second year improper feeding is probably as common in Australia as in Europe. Why, then, is rickets less common in Australia? Three reasons are given: First, children of two years and upward are better fed, and consequently rickets developed to a slight degree in the early years of life is more rapidly recovered from. Secondly, it is probable, as suggested by Dr. Muskett, of Sydney, that in the warmer climate of Australia the diminished consumption of hydrocarbons and proteids necessary to maintain animal heat renders their relative deficiency in the food less injurious. In the third place, stress is laid on the abundance of fresh air which children enjoy in these colonies. They are oftener in the open air than children in England, and the frail construction of the wooden houses insures a certain amount of ventilation within doors. Another factor which has been suggested as being of some importance in favoring the development of rickets, is want of light. Whether light or fresh air be the more active agent, the author believes that to the abundance of one or both of these must be attributed the comparative exemption of Australian children from this disease.

THROMBOSIS OF THE SUPERIOR LONGITUDINAL SINUS.

From a study of the symptoms observed in three cases of wasting disease, in which thrombosis of the superior longitudinal sinus was found at the autopsy, DU PASQUIER (*Revue mensuelle des Maladies de l'Enfance*, 1892, No. 3, p. 105) believes that the following grouping of symptoms, if found in the last stages of a wasting disease, may be regarded as offering fair presumption of the existence of a clot in the superior longitudinal sinus. These are: somnolence, coma, a state of rigidity, a fixed and prolonged attitude in extension or flexion, champing of the jaws, blepharo-spasm, and tremor or the fingers.

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